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ABSTRACT

This document attempts to raise questions about the judicious use of information at various levels, and its impact on postsecondary educational institutions. It focuses on the major issues involved in the aggregation and comparison of information about postsecondary education, the needs and usage of such information, and prospects for increasing demand for such information. Part 1 is devoted to the progress report on the work of the National Commission on the Financing of Postsecondary Education. It also discusses the issues of tension, problems, limitations, opportunities and advantages of effective management information systems, and information aggregation addressed first from within the institutional perspective and second from state and federal perspectives. Part 2 considers management and information systems as the beneficiaries of postsecondary educational systems and systems not as ends in themselves but as a means to increase benefits to students and society. Part 3 contains issues of a less technical nature involving changing conditions in uses of management information systems, such as collective bargaining information needs, program innovation within traditional management systems, policy issues related to data base management, a humanistic management system for education, and regional data centers. Workshop sessions dealt with the National Center for Higher Education Management Systems' products, state systems, regional systems, community colleges, small colleges, and particular management and information system development. (Author/KE)

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INFORMATION IMPACT – COLLISION WITH TRADITION

Shifting Levels of Decision Making in Postsecondary Education

Conference Proceedings

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INFORMATION IMPACT. COLLISION WITH TRADITION

SHIFTING LEVELS OF DECISION MAKING IN POSTSECONDARY EDUCATION

Proceedings of the 2nd National Forum
on New Planning and Management Practices
in Postsecondary Education
held in Chicago, November 14-16, 1973

Report No. 49

Edited by
Richard M. Millard, Robert F. Corcoran
and Nancy Eklund

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FOREWORD

In the introduction to the proceedings of the first National Forum on New Planning and Management Practices in Higher Education, published in May 1972, it was suggested:

> With the converging concerns regarding institutional financing, public accountability and the development of more effective techniques for planning and management of postsecondary educational institutions and systems, the need for serious, practical consideration of the state-of-the-art in new planning and management techniques in postsecondary education has become progressively more critical.*

While developments in planning and management practices in the nearly two-year period between the first and the second forum have not been revolutionary, they have been constant, as has the increase in numbers and types of institutions involved in utilizing the new techniques. Accordingly, the need for such practical consideration of the state-of-the-art is as critical today as it was in 1972.

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*Millard, Sweeney and Eklund (eds.) Planning and Management Practices in Higher Education: Promise or Dilemma? Denver, Colo.: Education Commission of the States, 1972. Page 5. Forum held Jan. 26-28, 1972, in Denver, Colo.

However, in addition to the desirability of periodic review of the state-of-the-art in the light not only of technical advances but of changing external conditions, with the more widespread use of new management techniques and particularly management information systems, it becomes a matter of major concern to take a closer look at the impact of such information systems on postsecondary educational institutions and on systems of institutions. Assuming that the more widespread use of information systems and increased demand at institutional, state and federal levels for more adequate information has to some degree improved managerial efficiency and ability to bring information to bear on decision making, what effects has this had within institutions on traditional structures and on the roles of faculty, departments, even schools or colleges in complex institutions, on the decision-making process? What effects has it had on institutions in statewide systems? What effect is it likely to have not only on institutions but on statewide systems and consortia if the federal government, as evidenced in the charge to the National Commission on the Financing of Postsecondary Education, requires more exhaustive information including development of national standard procedures for institutional costing and data reporting? To the extent that with information and information aggregation goes power, the potential conflict of the information revolution of the last few years on the traditional decentralized modes of operation within postsecondary education seems clear.

This is not to suggest that within the contemporary world, with the expanding universe of postsecondary education in contrast to traditional higher education and with what appears to be a leveling off of college-going rates of traditional "college-age" students, such collection and aggregation of information is not crucial for intelligent planning and decision making. But it is to raise questions about the judicious use of information at various levels if what has been held to be the necessary leeway or independence of departments, institutions, even systems of postsecondary education for effective educational experimentation and programmatic integrity is to be maintained.

Accordingly, the planning committee adopted as the theme of the second forum, "Information Impact--Collision With Tradition." The program focused on "a call to conscience" in relation to the major issues involved in the aggregation and comparison of information about postsecondary education, the needs and usage of such information and prospects for increasing demand for such information. In the light of this focus the banquet session was devoted to a progress report on the work of the National Commission on the Financing of Postsecondary Education by Ben Lawrence, its executive director.

In the plenary sessions, the issues of tension, problems, limitations, opportunities and advantages of effective management information systems and information aggregation were addressed first from within institutional perspectives and second from state and federal perspectives. John E. Corbally Jr., president of the University of Illinois, and Peggy Heim, coordinator of institutional planning at Bucknell University, dealt with the impacts within and on institutions, including both the advantages of and necessity for adequate information and cautions and reservations in relation to its use. Robert C. Andringa, minority staff director of the U.S. House of Representatives' Committee on Education and Labor, underlined the need for adequate information at the federal level to insure enlightened congressional action and effective policy determination. Martin Trow, professor in the Graduate School of Public Policy at the University of California, Berkeley, underlined the need for caution, the dangers in unsophisticated comparisons and concern for circumspection in the collection and use of information in determining public policy.

To insure that in the discussion of management and information systems the beneficiaries of postsecondary educational systems were not left out of the picture, and to remind forum participants that systems are not ends in themselves but that their excuse for being is to increase benefits to students and society, a luncheon panel chaired by Paul Taubman, including members of the Board on Human Resources of the National Research Council, discussed the benefits of higher education.

Finally, while the small group sessions did address the current state-of-the-art, they also included issues of a less technical nature involving critical changing conditions in uses of management information systems, such as collective bargaining information needs, program innovation within traditional management systems, policy issues related to data base management, a humanistic management system for education and regional data centers: policy before hardware. The group sessions were designed to include a wide range of concerns of different types of institutions and systems. Thus, sessions dealt with the National Center for Higher Education Management Systems' products, state systems, regional systems, community colleges, small colleges and particular management and information system development.

As was the case in the earlier forum, the concern of the planning committee was that this forum also approach the issues and the state-of-the-art through discussion among institutional and system users themselves, of systems and approaches actually in use today rather than theoretical discussions by system developers of what may be available tomorrow. The forum did not attempt to be definitive or all inclusive but to highlight major developments and, perhaps more important in this forum than in the first one, to highlight the concerns, problems and opportunities involved in effective use of new management, information and planning practices in the expanding universe of postsecondary education.

Acknowledgments

The Education Commission of the States expresses its appreciation to the cosponsoring agencies and to the members of the planning committee for the time, effort and support that made this second National Forum on New Planning and Management Practices in Postsecondary

Education possible. The members of the committee were:

D. Francis Finn, Executive Vice President, National Association of College and University Business Officers

Lyman A. Glenny, Director, Center for Research and Development in Higher Education, University of California, Berkeley

Robert Huff, Associate Director, National Center for Higher Education Management Systems, Western Interstate Commission for Higher Education

Lyle Lanier, Director, Committee on Administrative Affairs, American Council on Education. (Alexander Astin, now with the University of California at Los Angeles, served as representative for the American Council on Education until August 1973.)

Robert B. Mautz, Chancellor, Florida State University System, State Higher Education Executive Officers Association

Charles R. Thomas, Executive Director, College and University Systems Exchange

We are grateful to the plenary session speakers not only for their contributions to the forum, but also for their willingness to review their manuscripts prior to publication. We particularly appreciate the contribution in time and effort of the small group and systems presenters in preparing the materials for the forum and to their institutions for permitting the materials to be used.

A special word of thanks should be included for Nancy Berve and Robert F. Corcoran for coordinating the work of the forum and for arranging details of this publication. In addition, Nancy Eklund and Jeanine Bays should be thanked for final editing of the manuscripts.

--Richard M. Millard
Director of Higher Education Services
Education Commission of the States

CONTENTS

Foreword iii

Part I. -- Plenary Addresses

The Impact of MIS on and Within a Major Institution and Institutional System 2
John E. Corbally, Jr.

The Use and Misuse of Management Information: Advantages and Disadvantages From the Perspective of the Institution 18
Peggy Heim

New Demands by Government for More Information From Postsecondary Education 48
Robert C. Andringa

The Public and Private Lives of Higher Education .. 71
Martin Trow

Report and Comments on the National Commission on the Financing of Postsecondary Education 115
Ben Lawrence

Part II. -- Workshop Sessions

Accounting as a System 156

Field Test of NCHEMS Products: Public Community Colleges, Private Colleges and Universities, Public Colleges and Universities 160

Florida's Total Business Management System (UNIFTRAN) 166

A Humanistic Management System for Education (Battelle) 168

Regional Data Centers: Policy Before Hardware 172

Policy Issues Related to Data Base Management 174

Connecticut/IBM Sharing of Resources 184

Commercial Systems: Another Option 186

Institutional Research and Planning Project, Council for Advancement of Small Colleges 188

Collective Bargaining Information Needs 207

State Formula Budgeting (Oklahoma) 211

Program Innovation Within Traditional Management Systems 217

Exxon Foundation Programs in Modernizing College Management 219

Part III. -- Panel Sessions

Panel on the Benefits of Higher Education

1. Moderator's Introduction (Paul Taubman) 224
2. The Noneconomic Outcomes of Higher Education (Dael Wolfle) 228
3. Effects of Higher Education on Child Rearing and the Family (Bettye Caldwell) . . 241
4. The Impact of Higher Education: A Minority Perspective (Edgar G. Epps) 253

"The Experts Answer" 274

INFORMATION IMPACT: COLLISION WITH TRADITION

SHIFTING LEVELS OF DECISION MAKING IN POSTSECONDARY EDUCATION

Proceedings of the 2nd National Forum
on New Planning and Management Practices
in Postsecondary Education

PART I

PLENARY ADDRESSES

THE IMPACT OF MIS ON AND WITHIN A MAJOR INSTITUTION AND INSTITUTIONAL SYSTEM

John E. Corbally Jr.
President
University of Illinois

The theme for this second national forum includes several phrases, each of which might itself be a forum theme. "Information impact" is one; "collision with tradition," another; and "shifting levels of decision making in postsecondary education," a third. Combining these three themes into one produces a sort of "super theme" of a depth and breadth which offer unlimited rhetorical opportunities to one listed as a "co-keynote speaker." In spite of this limitless possibility, I shall attempt to avoid the challenge of solving all of the problems of the forum and of the world in this one stirring address.

I do have several thoughts which provide a framework for my comments. First, as much as I am impressed by the changes which impact upon education and upon educational institutions in our modern society, I find it essential to remain even more impressed by the constancy of our profession and of our institutions. In concentrating upon change, upon new ideas or technology, it is easy to lose sight of those things which do not change. Our purposes and our basic processes are rooted in the teaching-learning environment of the classroom, the laboratory and the library. What is important in our work is what takes place in the minds and hearts of our students--minds and hearts that operate on the physiological, neurological and psychological mechanisms that have existed since mankind was created or evolved. Regardless of the data that our machines produce, regardless of the reports and information that underlie our administrative decisions, regardless of who makes those administrative decisions, the teaching-learning process remains basically constant.

Second, I find no evidence of a necessary correlation between management efficiency and educational efficiency in our institutions. Thus, while inefficient management may lead to bankruptcy and to closure, there is no real evidence that on the last day of its life, the teaching-learning process in the bankrupt institution was less alive, less stimulating, less productive than was the process in a well-managed, well-endowed, well-to-do institution. It might be true, as a matter of fact, that on that last day the process on the bankrupt campus was more alive than was the case on the other campus. I do not mean to imply by this statement that management effectiveness is unnecessary in higher education. The breadth and depth of the experiences we provide our students depend upon resource stability and upon some form of organization of experience. Obviously, on the day after bankruptcy and close, the educational process--not to mention the efficiency of that process--in the bankrupt college is gone, and society has experienced, therefore, a real loss. I do not, therefore, speak in behalf of bankruptcy. I merely want to bear in mind that educational efficiency rather than management efficiency is our primary goal. My next point will elaborate upon this reminder.

And so finally--finally in an introductory sense, that is--I do emphasize that I do not find organizational management and the effectiveness of the teaching-learning process to be incompatible companions on a campus or in a university system. If management is essential to avoid bankruptcy or, to be less extreme, to provide necessary resources in support of the teaching-learning process, then management and teaching-learning are essential companions. Those who argue that universities are more similar to the Metropolitan Opera than to the Metropolitan Life Insurance Co. and who use that argument in a kind of antimanagement way, ignore the facts that the Metropolitan Opera is managed and that the Metropolitan Life Insurance Co. engages in teaching and learning. There is good management and there is less-than-good management. One characteristic of the former is that it is aware of the objectives of the organization and that it serves those objectives.

I find it important to remember, then, that there is much constancy in our profession and in our institutions; that our concern for efficiency must be a concern for educational efficiency; and that management--good management--is essential to the success of our undertakings in education. While there is little of earthshaking revelation in those reminders, without them we can do ourselves and our work much disservice.

Within that framework, then, what is the impact of new management techniques upon our institutions? From my point of view, the impact is less than is popularly imagined. The impact upon managers and upon management staffs is much greater than is the impact upon the institutions. But this statement ignores the question, "What is the impact supposed to be?" Put another way, "Is the impact of new management systems supposed to be radical change?"

The management of an organization has several objectives. In an oversimplified way, one can say that management has the responsibility to make decisions concerning activities of the organization or to see that such decisions are made; the responsibility to evaluate the results of those decisions in terms of the objectives of the activities or to see that such evaluations are made; and the responsibility to pose new decision problems based upon the evaluation of the results of old decisions and upon an analysis of new or newly important factors that impinge upon the organization or to see that such problems are posed. Depending upon the size and complexity of the organization and upon the number of factors that impinge upon that organization, the numbers of decisions and decision categories that face the management of the organization will vary.

It is clear that universities and university systems are complex and increasingly large. It is equally clear that universities and university systems have become an increasingly high priority to a growing number of external agencies. Consequently, the numbers of decisions and decision categories that face the management of higher education have increased and continue to do so. An elementary axiom of decision making is that to the extent possible, decisions should be based upon as complete and accurate information concerning the matter to be decided as is possible. Further, decisions should be based upon as accurate a forecast as is possible of the results of the alternative choices from among which a decision will be selected. The meeting of the requirements of this axiom calls for data or, if you will, for information. It has always called for data or information.

For example, the development of a time schedule for a university involves decisions and involves information. At one time for all, and still for a few universities or colleges, the required information could be gathered at the student chapel meeting and at a faculty meeting, and decisions about the time, place, variety and number of course offerings could be made overnight by one or two people. For most of us, that time is gone. We still need the same information--thus my claim against radical change--but we need new methods to get it. Management information systems have not changed management; management and the times have changed management information systems. Or, if you will, management information systems are merely new ways that size and complexity demand to do the same things we have always done.

Add to the increasing complexity of management's decision-making responsibilities the new stress upon accountability, and the need for organized information becomes even more intense. An underfunded system of higher education attracted limited attention in the 1930s and early 1940s, and a fairly well-funded system in a booming economy attracted the same limited attention in the late 1940s, the 1950s and the early 1960s. Then, however, came both the student revolt and the taxpayer revolt. The student revolt made it "clear" to many that those of us managing higher education "did not know what we were doing," and the taxpayer revolt made it clear to legislators that some state agencies had to have their budgets cut or at least tightly reined in. What better place to start than with an expensive state agency such as higher education whose managers "obviously were not managing." Suddenly, state coordinating agencies, executive budget offices and legislative staff offices developed or were expanded to help us manage higher education. Accountability became the new watchword, and it was (and is) a slow day in the university administrator's office if at least two or three questionnaires or requests for information did not arrive from some state or federal agency. Universities--which really were quite well managed in terms of the requirements of the 1940s, 1950s and early 1960s and which had responded miraculously to enrollment and programmatic pressures--found that in self-defense they would have to try to develop information banks and would also have to try to influence the questions addressed to those banks. All too often, outside agencies were asking the same question using widely different terminology, and universities were answering the same question with widely different answers. I recall, for example, one glorious day at Ohio State when four offices separately reported the current FTE enrollment at Ohio State using four sound but completely different numbers. I also recall the directive we then issued which in its basic substance said, "We may give the wrong number, but let us all give the same number!!"

Every state agency wanted information. The wants were legitimate, and we needed to be able to respond. The mystique was gone, and when we spoke of needs, of problems, of quality, we were asked to back up our words with data--accurate, organized, understandable data. And thus the organization of information became and remains a key requirement as we meet the basic management responsibilities of decision making and of accountability.

Unfortunately, for a variety of reasons--partly associated with the traditional requirement of a profession that it develop a unique symbolism and mystique--we have developed an alphabetical and semantic mumbo jumbo which surrounds our information efforts and which makes them appear to be new and, to many, frightening. There is really no more reason to speak of a CAMPUS III on a 175 as an adjunct to HEGIS than there was to speak of a Sara Jones on an L. C. Smith Standard as an adjunct to the class cards in the tub. Chris de Young spoke of understanding program objectives as the foundation of a budget in 1927 and forgot to call it PPBS, so he was never revered as a "Whiz Kid." MIS is not much different from the old FOWGO system--"Find Out What's Going On!"

As a university president I really do not care what the numbers are on the machines whirring away in air-conditioned splendor in our basement, nor do I care what acronym has been assigned to the program that is currently asking those machines to produce our payroll checks. I do know that I am asking a great deal of those machines and of the people who manage, program and operate them. Probably, however, in their time and in their world, my predecessors asked equally as much of those who managed, programmed and operated an abacus, or a typewriter, or an adding machine, or a pencil and the classic green eyeshade. Basically, those machines and those people help me and my colleagues shorten the odds in decision making in a complex environment and help me and my colleagues account for what we are doing with money and with people in that same complex environment.

They do not guarantee that I will make the right or the timely decision; they will not guarantee that all is well and legal and aboveboard in our university. They do not replace me nor dehumanize me nor threaten me. They did not create the new staffs of our legislative appropriations committees, nor did they create the coordinating board that complicates my life. They did not create governors and legislators who seek or ask me to seek the "fat" in our budget, nor did they create demands for 5-year or 10-year long-range plans. They simply sit there--neutral and uncaring--and challenge me and my colleagues to be wise enough to use them to help deal with some age-old problems in modern dress.

It is particularly important to remember that the machines and the systems do not--in and of themselves--have anything to do with "control" or with "autonomy" or with "involvement." The complexities and costs of higher education have influenced "control" and "autonomy"; increasing efforts of the private sector of education to share in public funds have influenced the autonomy of that sector; the rise of "consumerism"--a concept falsely applied, in my view, in higher education--has certainly influenced "control" and "autonomy" and "involvement." But some of the famous "giants" of our profession--the university presidents who molded institutions in their images--cared little for involvement at "lower levels" and exercised their power without the aid of computers or of acronyms. The potential for various forms of management is always present, and one must not confuse machines with management style.

So my plea regarding discussion of new techniques to aid management is that we not find it either necessary or appropriate to try to invent new concepts of management. And particularly, I stress that we not forget that our real task is to aid and to support the teaching-learning functions of our institution. Unless the information we so completely and sometimes painfully gather and organize and print out, and the decisions we make, and the reports we produce, can be related to those central functions, we are playing a parasitic role with a host that cannot really afford to feed us and sustain us.

I ask you, then, to join with me in refusing to assume that information and the means of collecting and displaying information have in some mysterious ways become more central to our lives and to the lives of our institutions than are the people and the activities which that information describes. We desperately need to maintain perspective in our activities and in our society, and a key requirement in doing so is to maintain our focus upon what is central rather than to focus upon peripheral phenomena. In that way, we can deal with information impacts, with seeming complexity and even with acronyms and numbered machines and still retain our age-old concern--our tradition, if you will--for the betterment of our society through teaching and learning.

THE USE AND MISUSE OF MANAGEMENT INFORMATION: ADVANTAGES AND DISADVANTAGES FROM THE PERSPECTIVE OF THE INSTITUTION

Peggy Heim
Coordinator of Institutional Planning
Bucknell University

THE SOCIOLOGICAL CONTEXT

In Search of Panacea. Higher education and those who control it have fastened upon a panacea for their problems: management systems and the information derived therefrom.[1] Much is expected of management information. We should not be surprised that higher education looks for a panacea. Its troubles are many, and they are growing. Like a patient who knows not what ails him, higher education longs for a miraculous cure.

The Groups Concerned. There are two main groups that hope to find solutions--or at least partial solutions--to their problems in management information and management systems. They include the institution itself--administrators, faculty, boards of trustees and, to some extent, students--and the governmental interfacings responsible for higher education. On the state level these interfacings include bureaus of the budget, the governor's office, state coordinating councils, sometimes boards of education, legislative committees concerned with finance and education and legislators. Similar interest groups exist on the federal level.

Reasons for Their Concern. Basically these groups have two problems. The first, and most pressing, problem relates to the allocation of resources. The economic situation has changed. For a variety of reasons additional funding is no longer easy to obtain. Even original levels of funding may be hard to maintain. In this economic environment, the problem is this. How should resources be allocated, and can the decision be made acceptable? The second problem relates to the need for information. In part this is a function of size and multiunit structure. In part the need for information arises from increasing complexity in the economic, political, social and legal environment. The institution desires information in readily obtainable form in order to improve decisions and to respond to its constituencies and governmental agencies. The coordinating and funding agencies and committees want to know what they are doing. And they too must respond to constituencies.

The Institutional Environment. Some of the troubles within institutions emanate indirectly from a serious slowdown or even a reversal in the rate of growth of enrollments and revenues; some from patterns of governance; some from the administrative styles of top administrators who emphasize, or even over-emphasize, participative administration; some from the fact that life is just more complex. During much of the 1960s funds came relatively easily in both the public and private sectors of higher education. There was little concrete long-range planning, except of a rather superficial nature. Few really looked down the road to see what lay ahead. In both public and private institutions there was enough slack--new positions, new money--to give something to all, or almost all. Faculty and administrators at all levels became accustomed to the expansion brought about by good-times and rapid enrollment growth. At the same time, patterns of institutional and system-governance were changing. Faculty pushed for participative administration. Students followed suit. Some administrators plunged overboard in providing for participation in administrative decision making. They gave little advance thought to what matters could be decided effectively by what committees, of what constituency and under what circumstances. Meanwhile, the economic situation deteriorated. The deterioration became severe. Institutions faced declining rates of growth in enrollment and revenues. For some, enrollments fell off. But the need for additional revenues did not decline. The "new" expenditures necessary to maintain institutional life and vitality could no longer be obtained through budgetary expansion. To an increasing extent they could be made only through the reallocation of resources.

The Situation Within Institutions. In this context management and planning data may be viewed as an attempt to do something about an unfavorable situation. First, data systems represent an effort to bring rationality to a casual system of decision making, particularly in the area of resource allocations. They replace what Earl Cheit has referred to as the Folk Methods of academe.[2] Second, data systems are seen as a potential device for reducing pressures on individuals in their roles as decisionmakers, whether nominal or otherwise, and as ball carriers for their constituencies. There may be a third factor, but this is less clear. In desperation institutions may be turning to administration by formula as an alternative to unsatisfactory processes in college and university governance.

Let us pursue the psychology and organizational sociology of these factors a little further, for they may provide insight into conscious and subconscious desires for management and planning information.[3] In the years of rapid budgetary growth administrators became accustomed to doing well--those who brought the boons back to the institutions, those who dispensed them and those who announced them. When the administrator brought good economic tidings and relative satisfaction prevailed, the administrator perceived himself, and was perceived, as successful. Moreover, he occupied a position in which he could play the role of "the good guy." It was a satisfying feeling. Financial stringency brings about a changed situation. When pressures are severe and prolonged, there are few boons and many budgetary cutbacks. It is hard to be successful. The administrator will probably have to become a "not-so-good guy." These experiences, particularly when the pendulum swings wide, are unsettling. They are unsettling to the administrators who do the taking away and to those who do the losing. Each administrative level experiences disturbances and pressures. There is little wonder all levels--the president, the provost, the deans, the department chairmen--seek ways that will make these decisions less personal and therefore more palatable to those they affect.

Governance patterns and personal administrative styles within the institution may also contribute to a desire for management information and planning systems. In the older era of the strong administrator who consulted informally but left no doubt that he personally made the decision, the stance of the administrator was quite different than it is now in institutions where he works through an involved committee structure. His interfacings with the faculty are different in degree and in kind. The faculty members on these committees are also affected. They are supposed to make recommendations influencing the allocation of resources. Resource decisions affect people--their colleagues, their friends. They are personal-type decisions, and they are hard to make. They are probably harder to make for faculty members than for administrators. It is well to keep in mind that for faculty the peer group remains the faculty. There are three groups who therefore become interested in a relatively mechanistic and impersonal system for making decisions: the administrator, the faculty member serving on a key committee and the faculty member affected by the decision. Decisions which are personal in nature are at best difficult and may even be socially intolerable. They erode the social fabric of the collegiate community.

In view of this situation, it is not surprising that there is interest in relatively mechanistic planning systems and management information on college and university campuses. To date, administrators have exhibited most of the interest shown in management systems. There is reason to believe that faculty may also find it useful. In institutions where participative administration has been carried far, faculty committees, department chairmen and faculty members themselves may find management information and mechanistic planning systems a means of reducing strain, maintaining their view of self and preserving the social fabric.

The Situation From Outside: Governmental Interfacings. There is a second set of constituencies involved in the funding and control of higher education. These are the state coordinating councils, the state departments of education, the bureau of the budget, the governor's office, legislative committees and the legislators themselves. Other agencies, committees and congressmen operate on the federal level. Their interests relate to the provision of services and their financing.

Both these state and federal groups have watched public outlays for higher education skyrocket from about $2.6 billion in 1959 to $13.1 billion in 1971.[4] These increases are due, among other things, to ballooning enrollments, to inflation, to the nature of service industries, to changing social values, to the deepening and broadening of knowledge, to the improvement of technology and to the adding of programs. But these funding and coordinating agencies suspect that some of these increased costs may be due to less valid reasons. They lack confidence that higher education's demands have been reasonable and our claims justifiable. They suspect we have been selfish and greedy. How then can they check the unparalleled rise in cost, identify greed, locate inefficiency and yet give to higher [illegible]cation the resources that it needs to do an acceptable job? These groups turn to management data--to cost and operating ratios in particular--to control the burgeoning costs of higher education.

THE GENERAL PROBLEM OF "INFORMATION"

Information, a Broad-Ranging Subject. "Information" is a very broad-ranging topic. Among other things, it can include counts of this and counts of that, such as various types of enrollment counts, faculty counts, total personnel counts, empty student spaces, space and space utilization reports, salaries for this group and that group reported in all sorts of ways--by sex, race, rank and position; tenure counts and percentages; funding and financial reports; student-faculty and other operating ratios; projections; cost analyses of this and of that calculated by various methods; and the results of simulation models.

Problems of Data Collection. In all cases, the basic question is, "What is the purpose of the counting or the reporting?" Is the information collected to solve specific problems? Or is the information gathered with the idea that hopefully it may be useful? After specific determination of what is to be accomplished--if indeed this step is taken--the statistic must be defined. It must be defined both theoretically and operationally. The theoretical definition is necessary to make certain the figure is relevant to the problem one has posed. The operational definition is necessary to increase the probability that the figure is calculated appropriately. Take the fairly simple problem of enrollment. It should be counted quite differently if one wants a measure of the student-status of individuals, a measure for staffing analysis or a measure of tuition revenue.

After the concept is defined, the next question is, can it be counted or reported easily with the data bases and processing methods the institution has at hand? Even if it is an important inhouse study, one cannot count on getting clean data when the statistic has to be handled or massaged in a unique way. But if the figure is being contributed for out-of-house purposes and the figure is not fairly easy to get, the collecting agency will more likely receive "reasonable" estimates--or not-so-reasonable estimates.

Once the figures are in the hands of the agency, users are likely to impute to them a purity and veracity that they do not have. Perhaps this is attributable to a mystical sacredness of figures. Two is not three; three is not four. We learn as a child that a number is something specific and true. We have a predilection for something which is quantified in contrast to that which is not quantified. We put more faith in it. One might call this belief in the purity of numbers the figure-syndrome. I suspect, if the truth were known, that most of us have this figure-syndrome to varying degrees. I among them. Transference of belief in figures to belief in the conclusions based upon them is an easy next step. Most of us in writing reports are careful to add the qualifying adjectives and adverbs, select the verbs with care, adding the appropriate *mays*, *mights* and *coulds*. The reader of the report tends to simplify. He drops many of the qualifications that the author so laboriously inserted. Even the author with the passage of time or with the need to simplify, tends to overlook the qualifying words. And thus we walk down the primrose path together--the author, the reader and the user of these statements based upon these mystical figures. We read into them more than was intended by the data contributor and the data collector.

A SPECIFIC TYPE OF MANAGEMENT INFORMATION: UNIT COSTING

Let us turn to a specific example, unit costing.

Locus of Action. Unit-costing is where we shall find the action in the next few years. The National Commission on the Financing of Postsecondary Education has recommended full unit-costing on a voluntary basis.[5] Congress will likely be gung-ho for it. Many Congressmen seem to think it will help us, the institution; it will help them; and indeed, nearly everybody. After five or six years on a voluntary basis most institutions will probably be called upon to report data in unit cost form.

Nature of the Data. If Congress carries out the national commission's recommendations, institutions will be asked to report full unit costs by level of enrollment and by field of study (i.e., major). Full costs include both direct and indirect costs. Determination of the unit cost for a given major (e.g., a major in psychology) involves the calculation of induced course load and student work load matrices. Reporting of full costs by major becomes a complex task. Even departmental cost data have to be cleaned up. They must be adjusted for interdepartmental transfers and interdisciplinary offerings. But the problem is only beginning.

Problems of Allocation. In order to ascertain cost differences between educating lower- and upper-division students, the recommended procedures call for the allocation of direct (departmental) costs by course level--lower division, upper division, etc., as well as level of student. Course level categories are often not clear-cut. But even if they are clear-cut, the data needed for the assignment of costs are imprecise. The allocations may be rough indeed. Perhaps even more arbitrary is the allocation of other activities, such as library, students services and overhead.[6] The fact that all institutions use the same allocating conventions does not eliminate their arbitrary quality. Costing conventions are not neutral in their effect. Thus the use of one convention rather than another may overstate certain types of costs for institutions with certain characteristics and understate them for institutions with other characteristics.

Activity Analysis. Potentially an even greater source of difference in cost figures may stem from whether institutions use activity analysis or assignment in allocating faculty and other professional salaries to cost centers. The rationale of activity analysis is that salaries and fringe benefits should be allocated in the same way people spend their time. On the surface the principle appears sound, but it overlooks both the sociology and economics of the profession. One of the characteristics of learned professions is that the professional frequently gives of his own time (beyond what might be considered a normal workweek) to carry on activities related to his profession. This contribution may be things of interest to the professional that would get little attention under a market system--that is, little would be spent on them. Thus to use activity analysis to determine what proportion of total "employed" time, and hence salary, should be assigned to what function creates an unrealistic determination of value. The significant thing is what functions he is paid to perform. Unfortunately, any assignment of ratios among activities is arbitrary, for it is based upon how the assigner sees responsibilities or the costing results he desires to achieve. In brief, since salary and benefits are a significant cost component, their allocation may affect the inter-institutional comparability of data.[7]

USEFULNESS OF COST FIGURES TO THE INSTITUTION

Usefulness to the Institution of Full-Cost Per Unit of Output. How useful full-cost per unit of output will be to the institution depends upon the use to which they want to put them. And how they calculate them. The real question is, how useful the data are relative to the cost of obtaining them? For example, it will cost an institution much more to determine the full cost of a lower-division math major than the full cost of a credit hour in math. Both of these will cost much more to derive than the direct cost of a credit-hour in math.

Let us suppose a liberal arts college has calculated full-cost of each major. Philosophy and religion are very high-cost. Should it eliminate majors in these fields? The average cost figure will give them no indication of how much money they might save, for they will probably have to continue teaching philosophy and religion as service courses for other majors. They might be able to save almost nothing. Or suppose they decide to eliminate philosophy and religion entirely. What will be the repercussions on total enrollment--not just the handful of majors? There is no doubt that offerings and enrollments are interrelated, not just the interrelationships that appear in an Induced Course Load Matrix. Students want to enroll where they can get an attractive program. They are affected by subtle things--by impressions that a college offers a well-rounded program. The college that follows the dictates of cost figures may very well eliminate its enrollment.

Conclusions With Respect to the Institution. Can we draw any conclusions with respect to cost data for institutional use? (1) Direct unit costs per credit-hour are more likely to be useful than full costs. They will probably have to be combined with other statistics and operating ratios. Useful statistics include student/faculty ratios and enrollment trends by individual faculty member and course type, to name a few. These will give the basis for reallocating positions, inducing the department to change the nature of the course offerings and the type of faculty they hire. They can help in arriving at tenure decisions and in selling these decisions. They can help also in shifting over from tenurable to temporary appointments.

(2) Incremental cost analysis will also be more useful than full-cost analysis. In fact, to base a decision on full-cost figures without incremental net cost analysis may get the institution into deep trouble. It is essential that one analyze both the revenue and cost implications of alternative actions.

(3) Full-cost data may be most useful in making palatable sweeping decisions, such as the elimination of whole departments or majors. It is not at all certain that direct cost data could not achieve the same ends.

(4) In conclusion it appears that less complex net cost analyses will be more useful to the institution than the type of costing that is likely to be imposed upon them by Congress and by state agencies.

As to whether institutions need cost-revenue analysis to improve operations, I would like to go on record to say they do. But the data must be designed to fit the problems. I question whether we have really identified the problems, as administrators see them, and we certainly have not determined through extensive use and investigation how useful the data will really be.

USEFULNESS OF UNIT COST FIGURES TO GOVERNMENTAL OUTSIDERS

As an Indicator of Inefficiency and Waste. Governmental agencies and legislators are hopeful that unit cost figures will tell them which programs are inefficient or where expenditures seem excessive. The data are not this precise. In part, this is due to the fact that that which is being measured is not precise. A credit-hour at one institution may not be the same as a credit-hour at another institution, though they have the same name. Take the simple example of a 4-1-4 schedule in two institutions. Neither pays their faculty extra. One gives course credit for the January term, equal to one fourth of a regular term. The other gives no course credit. By giving course credit, the one institution can reduce its cost per credit by about one-eighth.

Another problem is that that which is called by the same name at two schools may be quite different things, as for example, a psychology major. The mixes are different. Does this mean the high-cost program is inefficient or is run extravagantly? One cannot tell. One must analyze the program and each separate cost factor.

There are also trade-offs. A few departments in an institution may be particularly outstanding. These departments have a high percentage of the very high-paid faculty in the institution. So their unit costs are high. Does this mean they are extravagant or inefficient? One cannot tell from the data alone. The administrative agencies are back where they are now. There is no substitute for knowing just what one is buying. There is no substitute for having confidence in the administrators.

As a Technique for Making Their Decisions Palatable. Public agencies, governors and lawmakers face the same problems as institutional administrators. They are confronted by competing claimants within the higher education sector, as well as from other sectors. Within the education sector there is need to make their decisions acceptable. The decisions must not seem arbitrary. In unit-cost data they hope to find the rationale.

THE USE AND MISUSE OF DATA FROM THE VIEWPOINT OF SOCIETY

Society's Interest in Efficiency. Society is, of course, interested in efficiency. Reduction in inefficiency will release resources for other uses. It is not at all clear, however, that the data collected will really facilitate the reduction in inefficiency and cost. The data may not be of that type. They are not likely to be highly comparable. Thus trying to identify real inefficiencies may be like trying to comb one's hair with a broom. Not highly successful. But even if inefficiencies and the possibilities for cost reduction can be identified, there is no assurance they can or will be made. Governmental agencies and committees operate within an environment characterized by constraints and political considerations. It remains to be seen how much data can help them in making hard decisions and in making them stick.

Potential Drawbacks and Abuses. As Earl Cheit has pointed out in his paper presented at the 1973 meeting of the American Council on Education, there is the danger that unit costing will reduce diversity.[8] When they compete, things that can be quantified tend to be accorded more importance than things that cannot. Qualitative differences tend to disappear. The mean becomes the norm. We move closer and closer to a society of sameness.

In brief the educational community is just beginning to develop and use unit cost data. We do not know what we are getting into. For example, we have not yet studied unit cost data sufficiently to know the degree to which erratic changes in enrollment patterns may affect cost levels, the effect of different educational policies and accounting practices among institutions upon the comparability of data, and the usefulness of unit-cost data in solving the problems to which members of the educational community and government want to address themselves. Estimates of aggregate cost of data preparation by institutions are of necessity provisional. Dysfunctional effects are bound to arise. While we can anticipate some of the dysfunctional effects, we cannot identify all of them in advance, much less measure their severity. Moreover, benefits are uncertain. They may be more or less than we think.

For these reasons experimental work should be done with sample groups, not individual institutions scattered here and there, but a state system encompassing a significant portion of the state's public and private institutions. Much work needs to be done and evaluations made before full unit-costing is imposed on the total population of institutions. We should take a page from our own book. Is the dollar benefit worth the cost? Whose benefit and whose cost? It is well to bear in mind that in the case of public institutions, much of the extra cost will be borne by the public purse; some by the students. In the case of private institutions, most will be borne by their students.

Let me close now on a positive note. The potential benefits of cost-revenue analysis are great, though the analysis may not take the form of full unit-costing. Hopefully, from this experiment will come new procedures and applications that will improve decision making in and for the educational community.

The writer would like to acknowledge the helpful observations and comments offered by colleagues, especially Francis Finn of the National Association of College and University Business Officers (NACUBO), Howard R. Bowen of the Claremont University Center, Richard Lyman and Frank Newman of Stanford University and John Zeller and Wendell Smith of Bucknell University. They should not be held responsible, however, for the views expressed herein. She would also like to acknowledge her special debt to Earl F. Cheit whose paper is cited elsewhere in the study.

NOTES

[1] For a definition of "management systems," see Earl F. Cheit, "The Management Systems Challenge: How to Be Academic Though Systematic" background paper, 56th annual meeting of the American Council on Education, Oct. 11, 1973, p. 7. (Page references refer to the draft distributed at the ACE annual meeting.) Cheit includes three elements: "(1) the full kit of analytical tools available for use in institutions, (2) the related but more comprehensive techniques designed for statewide and even national use and (3) the conception of organization, not as structure, but as process: a process of goal designation, formulation of alternative plans, identification and selection of the best choice, evaluation of results and continuation of the cycle." The management information consists of the inputs and outputs of the system. An example is the NCHEMS system.

[2] Earl F. Cheit, op. cit. p. 29.

[3] In the original paper presented at the second forum of the Education Commission of the States, I included faculty in the discussion. I am not certain the faculty point is valid, but it seems worth exploring. In brief, sustained economic prosperity increased the faculty view of their importance and therefore affected their image of self. Now when the boons from prosperity must be taken away for financial reasons, the view of self may be threatened. This is one of the reasons the recipients of budgetary cutbacks often like cross-the-board reductions. They are impersonal. They do not affect the view of self. For these same reasons faculty may find that mechanistic systems, such as unit costs or operating ratios, provide a less personal rationale for budgetary cuts.

[4] The Carnegie Commission on Higher Education, Higher Education: Who Pays? Who Benefits? Who Should Pay?, New York, McGraw-Hill Book Company, June 1973, p. 20.

[5] See chapter 8 of report of the National Commission on Financing Postsecondary Education. Because of the great difficulty of allocating costs in multipurpose organizations, universities will for a time, at least, be exempted from unit-cost reporting.

[6] According to the recommended procedures, student service costs are to be allocated on the basis of student credit hours, etc; library costs on the number of student and faculty full-time equivalents; and all other costs on the basis of direct expenditures.

[7] There is serious question as tc the accuracy of activity analyses. Faculty reports are influenced by administrative and institutional expectations. There is therefore likely to be a difference between what they really do and what they say they do. Another problem is the difficulty of maintaining roughly accurate activity logs over a prolonged period. Faculty usually do not go to this trouble. They wing it. When winging it, time allocations are influenced by their perceptions and recollections. These are very imperfect for costing purposes.

[8] For an excellent discussion of other implications of management systems, see Earl F. Cheit, op. cit.

NEW DEMANDS BY GOVERNMENT FOR MORE INFORMATION FROM POSTSECONDARY EDUCATION[1]

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One of the greatest teachers the world has known often used parables to demonstrate some important dimension of human behavior. I have rewritten a sort of parable so many times to keep it current that I finally gave up. But it still communicates a point about the public's interest in information.

> Once, in a prominent city, there was a big House of Education surrounded by beautiful gardens. People began to question how this House of Education was carrying out the public trust. It was discovered that the occupants of this House had in their possession certain computer tapes containing

> important information about the management of their programs. The taxpayers felt, in the name of accountability, that these tapes should be released. The head of this House of Education, however, continually refused to release the tapes, proclaiming that some traditional concept of educational privilege prevented him from disclosing such things. The legal issues were fought out in the courts for years and years. But the people had long since lost a certain amount of faith in the occupants of that big House. And the support of the people to maintain that House of Education declined.

It is true, isn't it, that the public often makes up its mind more on what it perceives to be right, regardless of historical precedent, legal argument and even hard fact to the contrary? In our society, elaborate public relations operations costing literally billions of dollars are implemented to help shape people's perceptions.

We seem now to be in a period when the public perceives that higher education is costing more than it is worth . .that most colleges are poorly managed...that most leaders in higher education are not interested in using the best available techniques to understand the economics of their institutions...and that those institutions that do have financial information are reluctant to make it available to people who think they have a right to see it. This resistance to what the public thinks it should know only fuels the demands, even unrealistic demands, for more information.

I cannot explain all the reasons people have these perceptions. I sometimes wish I did not have to repeat them in a speech, because that in itself perpetuates the view. But I must say that, allowing for several exceptions, there is little information to prove these perceptions wrong.

Congress and state legislatures, regardless of what else they are, are fairly good mirrors of what the general public perceives. So it is not surprising that elected representatives of American taxpayers are asking more and more questions about the management of the education enterprise they support.

As you know, most of the hard work in legislatures is carried out by committees of elected representatives who develop a fair degree of expertise in their assigned areas over the years. Although legislators on education committees are influenced to some degree by the public's perceptions of education at any given time, they are influenced much more by what the outside experts--in most cases professional educators--can or cannot provide to them in response to rather specific questions. Those of you who have been called upon by state legislative committees, budget agencies or the Congress know that the questions are getting tougher and more detailed.

We have not had enough information about educational institutions, generally, to determine relative needs among a whole host of social programs. When Congress was told it had to respond to a financial crisis in higher education during 1970-71, there was almost no data to substantiate the claim. Nor can we now tell precisely how the situation has changed, if it has. We could not find out how much more it costs to educate an upper-division student than a lower-division student, when some suggested that an institutional aid formula should be based on such cost differentials. We do not know how much more remedial programs or vocational programs cost than general education programs at the same level. More importantly, we cannot find data that would indicate how more dollars can or even should produce better learning.... And so legislators are forced all too often to make decisions based on unsubstantiated perceptions.

As one who has been deeply involved in this process for the past four and one-half years, I can see no direction but toward more requests for more and more sophisticated information.

To be useful at the state and federal levels, the government will most certainly adopt procedures to allow for some basic comparisons among categories of similar institutions and programs.

At the national level, especially, it is easy to detect at least three general reasons for making these predictions.

First, the problem of scarce resources. There has been an almost unbelievable proliferation of federal domestic programs since the early 1960s. Not enough people are willing to raise taxes to support the inflated promises of newly authorized programs. So hundreds and hundreds of interest groups spring up around the over 1,000 separate federal programs to compete for the next federal buck. Most of the federal budget is locked in before the debate begins. In 1967, approximately 40 per cent of the budget was discretionary. Today, only about 25 per cent is available for discretionary purposes. Since almost all education programs compete for this discretionary money, legislators who want additional funds for education believe they can make more convincing arguments on the institutional behalf if they have better data.

A second incentive for seeking better data is the difficulty of allocating the total dollar amount finally available for postsecondary education among the 350-plus separate federal programs affecting postsecondary institutions. Roughly speaking, $9 billion of the total bill for postsecondary education comes from the federal government. But there is sufficient authority to spend perhaps as much as $18 or $20 billion. Which programs should get how much? That question demands not only more information about the effectiveness of individual federal programs, but a much better idea of the most pressing financial needs in various institutions to which these federal programs are directed. Both conservative and liberal spenders join in seeking this kind of information.

A third general reason for interest in better information systems is what might be termed a growing federal attitude of _in loco parentis_. It is argued that requiring institutions to produce new kinds of comparable financial data will really help them achieve a higher state of excellence, one which they might be incapable of or unwilling to achieve on their own.

That this attitude is alive and thriving on Capitol

Hill should be no surprise to anyone. Sparked in large part by the liberal humanism of academia, the federal government is applying the "general welfare" clause of the Constitution to almost every major activity of the body politic.

Did the intellectual community which first held the magnifying glass over tax inequities, industrial polluters, excessive defense expenditures and racial discrimination believe their own campus strongholds would forever escape similar scrutiny?

The same government planners and decisionmakers who create truth in lending, consumer protection, campaign fair practices and safe streets legislation should not surprise the academic community when they create something like the "Public Disclosure of Financial Information in Postsecondary Education Act."

These products of the in loco parentis philosophy will continue so long as the code words of "consumerism" and "public accountability" win votes.

Although there will be many new legislative decisions related to this information issue, let me remind you of what is already in federal law.

First, Congress has given the U. S. Office of Education the general mandate to "collect statistics and facts showing the condition and progress of education in the United States and to disseminate such information respecting the organization and management of schools and school systems...".

Most of us feel that this effort--represented mainly by the Higher Education General Information Survey (HEGIS) data in higher education--is too little, too late and often in a form of minimal use to policy planners.

Next, Congress has for many years given the commissioner of education additional data-gathering authority under most categorical programs. The exact words vary from program to program, but legislative drafters have come to view these provisions as part of the "boilerplate" for any new bill. Generally, the commissioner is entitled to require of applicants whatever information or procedures he thinks necessary to protect the financial interests of the government, to ensure the proper disbursement and accounting of funds or to otherwise carry out the purposes of the program.

The exact meaning of these provisions of law for an individual institution is usually spelled out in program regulations. Sometimes, having given the commissioner this general authority, individual congressmen will complain about the specific information USOE requires. But such protests are usually because a congressman believes USOE will use the information to slant a program in a way that the congressman disagrees with. It is seldom a question whether USOE has the right to seek information, per se.

In some programs, both the law and subsequent regulations ask for rather specific financial information. Title III of the Higher Education Act, the Program for Developing Institutions, is a good example. Here it is more important to understand the relative financial condition of one applicant institution against the others. Comparable cost per-student data would be helpful, but is not now available.

As you know, the Education Amendments of 1972 authorized a new program of general aid to all institutions. If and when this program gets funded, the demands for comparable cost data among various types of institutions will increase substantially. We had very little information on which to make judgments in developing the formula for this program.

Those who watched the two-year battle over this issue realize that most members of Congress are not willing to put money for higher education on the stump and run!

They want a formula related to some purpose and one that reflects the financial facts of life in higher education.

The 1972 amendments also authorized a program to provide emergency aid to institutions in financial distress. I would like to read one provision of this part of the 1972 amendments to demonstrate the conditions Congress set down for any institution asking the government to bail it out of its financial crisis. Some of you will be glad this program has not been funded! The provision reads:

> "(C) An application shall be approved under this subsection only if it includes such information, terms and conditions as the commissioner finds necessary and reasonable to enable him to carry out his functions under this section, and as he determines will be in the financial interest of the United States, and the applicant agrees--

> (i) to disclose such financial information as the commissioner determines to be necessary to determine the sources or causes of its financial distress and other information relating to its use of its financial resources;
>
> (ii) to conduct a comprehensive cost analysis study of its operation, including income-cost comparisons and cost per credit hour of instruction for each department, in accordance with uniform standards prescribed by the commissioner; and
>
> (iii) to consider, and either implement or give adequate reasons in writing for not doing so, any financial or operational reform recommended by the commissioner for the improvement of its financial condition."

Yet another creation of last year's legislation is the National Commission on the Financing of Postsecondary Education.[2] You know, I am sure, that Congress mandated the national commission to suggest "national uniform standards for determining the annual per-student costs of providing postsecondary education for students in attendance at various types and classes of institutions of higher education."

That requirement alone has caused more than enough anxiety in the education community. What you might not remember is that the Senate-passed bill not only required the commissioner of education to prescribe national uniform standards, but would have placed as a condition for receiving any federal aid under the Higher Education Act the submission of cost-of-education data determined in accordance with such standards.

While many members of the House-Senate Conference Committee were ready to accept that language, it was finally agreed to wait a year or so to evaluate proposed national uniform standards before requiring their use.

This, then, is some of what Congress has agreed to in the past. The implementation of these authorities has been carried out with a considerable amount of restraint, compared to what the commissioner could do if he so chose.

I do not believe the mood of key members of the House and Senate education committees has changed on these matters over the past year or two. Indeed, when I checked just recently with a few congressmen, the responses were almost identical. One said without hesitation that--and I quote--"if the higher education community doesn't have better financial information the next time around there will be hell to pay." The "next time around" means the congressional hearings prior to the expiration of the Higher Education Act on June 30, 1975.

It is hard to predict just what new directions the Congress will take on these issues. I do believe that the reporting requirements will be much stricter for programs of aid to institutions than for programs of assistance to students.

In spite of all this, I can assure you that no one I know in the Congress is asking for better cost analysis data to exert federal control over higher education. The motive, rather, is to improve planning and to find better means of justifying the expenditure of additional public monies.

We understand and appreciate the anxiety on the part of many in higher education. Will these increasing demands for information cause additional burdens on institutions? Of course they will. But we believe the present lack of sufficient financial information will result in poorer public policy decisions than will more information.

I would be less than honest if I did not admit to some personal uneasiness about the direction we are moving and the pace of that movement. It is most important that we keep our interest here in the proper perspective. Finding ways to analyze cost per credit hour, or cost per degree, or any other cost figures will not make or break postsecondary education in America. We believe, however, that it will make a significant contribution to the total enterprise.

As helpful as these new information techniques will be, there are many more important questions to face in the near future. We must more clearly define the purposes of postsecondary educational opportunities. We must find new ways to facilitate learning among new kinds of students. We need to sort out areas of responsibility among the various public and private sources of financial assistance. The differentiation of roles in the governance of postsecondary education needs clarification.

In all of this, management techniques and costing standards must be the servants of decisionmakers, not the master. If I had to choose between good judgment and good information systems, I would choose good judgment every time. But we should be able to have both, and one should contribute to the other.

What are some other dangers in moving toward greater information-based planning that should concern all of us? First, there will be a temptation for state and federal officials to require the general application of new techniques and procedures before they are fully developed and before each campus has administrators trained in their use. I personally believe the state-of-the-art will develop more quickly, with fewer undesired consequences, under the carrot approach rather than the stick. This can be achieved to the degree public funders perceive that the academic community is working to answer the difficult questions in this area rather than resisting or ignoring them.

Second, we must beware of creating a separate professional subgroup within education that intimidates the rest of us with their jargon and technical expertise. We will need to train a new breed of systems analysts for education, but decisions about the purposes, design and evaluation of their systems must involve the generalists.

What we do not need is another narrow guild, listed as number 192 on the academic roll call (or would it be 292?) that runs off alone in pursuit of its own professional ego needs. Rather, we need good team players who see their fancy computers as tools to be used in achieving the higher goals of a learning society.

A third danger of which we should be aware is the tendency to give more credibility to numbers than to logic spelled out in everyday prose. We have all seen administrators, newspapers, legislative committees and the general public get hung up on specific numbers without any understanding of the assumptions and estimates that might be behind them.

There is a special obligation on anyone presenting cost data or other information to make crystal clear what that data say and do not say, and with what degree of accuracy. It will be all too easy to take advantage of busy laymen in the legislature by giving them fancy charts and graphs without explaining the limitations of such data.

Finally, we must not allow our interest in analyzing inputs overshadow the greater need to relate input measures to educational achievement. It is really cost effectiveness we are after in the end, not simply cost analysis. When we can get a better handle on this, we can begin to move beyond our current perceptions and traditional myths.

Who knows what we will find? Perhaps we will discover about education what one car shopper decided about his transportation needs... "that a Porsche is nothing more than a Volkswagen without the stigma of low cost."

So let us approach this new interest in information with open minds, a balanced perspective of what we are about and a genuine spirit of cooperation.

NOTES

[1] Delivered at the 2nd National Forum on New Planning and Management Practices in Postsecondary Education, Chicago, Ill., Nov. 16, 1973. Will be published along with other conference proceedings by the sponsors of the forum.

[2] For status report, see Part III, p.

THE PUBLIC AND PRIVATE LIVES OF HIGHER EDUCATION

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The design of data systems for postsecondary education is intimately related to the uses to which the information that flows through that system is to be put. Data are the life blood of new forms of rationalized management being applied to institutions and systems of postsecondary education, and these in turn are the instruments for a new and larger role for public authorities in the assessment and direction of public higher education. Therefore, we cannot divorce a discussion of data systems from the relation between postsecondary education and the state.

Institutions and the State

In my view, the central problem in the movement toward universal access to postsecondary education lies precisely here, in the relation of our public colleges and universities with the state. The problem--really a set of interlocking dilemmas--involves the effect of expansion and broader access on courses and on academic standards; it involves institutional autonomy and diversity as these are affected by central planning and coordination and the demands for greater accountability and efficiency in the use of resources; it touches on the equality and inequality of institutions and on pressures on public agencies to reduce those inequalities by leveling up or down. It is here, at the interface between the institutions of teaching and learning and the organs of the state, that the most important and difficult policy questions arise.

Growth

It lies there most obviously because of the enormous growth of the systems of postsecondary education over the past decade or two and because of their costs. It is hardly necessary to document the growth in size and cost of these systems.[1] At the same time as post-secondary education has become much larger and more costly, it has also greatly expanded the variety of functions it performs for its student body and for the society at large. The enormous increase in cost creates demand for greater accountability by the institutions of higher education to the public agencies which in most countries supply the greater part of their support. Increasingly, ministries and legislatures want to know how higher education is using its growing budgets, and whether in fact, it is using them in the "public interest" and in some sense of the word, relatively "efficiently." And the increasing variety of functions performed by higher education makes their performance of direct concern to public bodies. Governments want to be sure that higher education is training the right number and kinds of people for a developing economy. It wants to know that colleges and universities are contributing to social justice by expanding access to groups and classes heretofore largely excluded from postsecondary education. It wants to know that they are doing research that will be useful to industry, to health, to environmental protection, to national defense or whatever the government of the day is concerned about. In some places, governmental agencies are becoming concerned that universities are devoting too much of their attention to research and not enough to the education of their undergraduates. In any event, the growth in the size and cost of postsecondary education and its growing importance for a wide range of public activities and policies leads governments to take an increasingly strong interest in how postsecondary education is spending its money, and what, in fact, it is doing with it.

From Interest to Influence

Almost inevitably, that interest is followed by governmental efforts to influence what the institutions of postsecondary education do. So far as these efforts are successful, the freedom and autonomy of postsecondary education to do as its members wish is constrained by decisions made externally. The autonomy of higher education is, of course, nowhere absolute and varies both formally and informally greatly in different countries and between different kinds of institutions in the same country. But in almost all industrial societies there is under way a broad movement toward greater central political direction of the development of higher education, arising out of the growing cost and increased relevance of higher education for many areas of national life. In a sense, postsecondary education has become too important and too costly to be left to professors and educators alone.

So this question--of the right relations between state agencies and the institutions of postsecondary education--becomes especially salient during the phases of transition from elite to mass and from mass to universal access systems of higher education, periods when so many traditional forms and arrangements are coming into question.[2] Put slightly differently, the question becomes: how can the legitimate concerns of the public regarding the cost, efficiency and expanded functions of higher education be reconciled with the freedom of colleges and universities to maintain their own integrity as institutions committed to teaching and learning?

Relations between government and higher education are increasingly more formal and reflect greater differences between the parties; they are carried on by people who do not always share the same values and unspoken assumptions regarding the nature and direction of higher education. Under these conditions of more formal and distant relations, the state is more likely to assert its conception of the public interest in postsecondary education as against what is increasingly perceived as the special interests of the senior professors in their elite universities.

Academic autonomies ultimately rest on a shared belief in the special expertise of the professoriate, in their knowing more about the conditions necessary for teaching and learning than anyone outside the university. In a narrow sense it may still be assumed that professors know more about teaching and research in their subjects than anyone else (though even that assumption is increasingly questioned). But it is by no means accepted by politicians and civil servants that professorial expertise extends to such questions as who should have access to their institutions, or that academics can strike, on their own, the right balance between basic and applied research, or provide solutions to the problems associated with continuing education or the development of new structures of post-secondary education. In these new areas of academic decision--areas associated with the move toward mass and universal access to higher education--expertise as well as ultimate authority comes to rest (or is thought to rest) in the government departments and legislative bodies that bear the responsibility for solving these problems and for financing solutions. The expansion of the functions of higher education inevitably determines and almost always narrows the realm of professorial expertise and strengthens the role of central decision-making bodies whose responsibilities are to make the system serve the state or nation rather than the professors and their disciplines. It is not so much that the formal responsibilities of state agencies of higher education change (though that may happen too). It is that as we move toward universal higher education, a variety of policy issues arise that force state agencies into a much more active, one might say interventionist, role. They assume that role--indeed, there is no one else to do it. But that itself has consequences for the future of our systems.

Postsecondary education has grown in size, in social impact and in cost. That alone would lead to more state intervention. But in addition, this growth has occurred disproportionately in nonuniversity, or nonelite forms of postsecondary education: in state colleges, in junior colleges, in open-access institutions and in the future, increasingly, in "second-chance" institutions like New York's Empire State College, or other forms of continuing education for adults. In the creation of new sectors of postsecondary education, state agencies and not universities play the decisive role. Moreover, since these new institutions are meant precisely to meet the needs of society that are not met by the universities, governmental bodies are more likely to keep their development under close scrutiny, to see that they do in fact meet "social needs" and not begin to drift, through emulation and status ambition, toward university models; do not begin to restrict access, narrow their curriculum, raise their standards, support programs of basic research and sever their ties with community and industry. In these new or transformed institutions of mass education or universal access, it is argued that institutional autonomy must be carefully restricted in order to insure that these places perform the functions for which they were created and not fall into the orbits and styles of the older prestigious universities.

Societal Changes

I have suggested that the growth in the scope and the functions of postsecondary education increases the role of nonacademic authorities in the decisions about what goes on in educational institutions. But other forces have been at work to undermine the autonomy of higher education. For one thing, there are many more people in the society who have had some postsecondary education and who therefore feel that they have a right to have views about it. One can see this clearly by contrast with European countries, where tiny proportions of the population have ever been to postsecondary institutions, and where decisions about that sector are still left very much in the hands of a small elite, substantially insulated from public opinion.

But the democratization of higher education has had another and perhaps more important effect. It has broken the near-monopoly of the leading state universities on the higher education of the state legislators and, to an increasing extent, of the professionals in state government. A growing number of people in state government who make decisions about postsecondary education are graduates of the state colleges or of university campuses other than the leading state university. These men and women are not quite so respectful of the leading state university and of its claims both to resources and autonomy. They went to institutions that got by on less (and often resented it) and which also were accustomed to a good deal more direct state intervention and control. As these people come to positions of influence and authority, they often do not see why the leading research university might not also profit from closer public scrutiny and perhaps also from a smaller differential advantage in per-capita support both for instruction and research.

The leading state universities, their professors and administrators also suffered in public esteem during the student uprisings of the late sixties. And ironically, during these years the universities became the targets of hostilities both from Right and from Left: from the Right for their allowing and indeed even encouraging political protests on campus; while from the Left they were increasingly challenged as elitist institutions, whose patterns of admission and recruitment, and whose stubborn defense of traditional academic standards, tended to favor privileged groups in society and, so it was charged, discriminated against the poor and minorities.

These feelings have in many state legislatures led to an odd kind of coalition, a coalition of conservatives and liberals who agree, if not on what the character of higher education should be, then at least on the principle that the state or "the people" should have more to say about the functions and management of the public colleges and universities. And that informal coalition--perhaps reflecting no more than a shared mistrust of the academic community--provides the necessary political base on which the new forms of rationalized management can make their claims for a larger measure of state intervention into the operation of postsecondary institutions.

The Hidden Benefits of Higher Education

I do not think that I need to say much about these new and powerful forms of organizational and program management. The emergence during World War II of systems analysis, the development of new analytical tools in microeconomics, the development of program budgeting, benefit cost analysis and policy analysis and the emergence of new conceptions of accountability have all transformed the field of public administration and have given public authorities powerful tools for the more direct assessment and evaluation of public programs. While I have few illusions about how much all of this can yet contribute to wiser and more effective public programs, I also believe that this movement can, and will in the future, make enormously useful contributions to the creation and administration of public policies. But while I do not doubt the potential strength and applicability of these new perspectives, I am equally concerned with clarifying their limitations. If we think for a moment just of cost benefit analysis, we know that inherent in this exercise is a statement of what a program or institution aims to achieve, what its own goals are and what benefits to its clients or to the state or to society it hopes to produce. And it is against those intentions that we try to assess the program: does it in fact achieve these ends, produce these benefits and at what costs? And by appropriate analysis of inputs, outputs and of the process that link those means and ends, we try to improve the efficiency and productivity of the program, or replace it by other programs that can achieve those ends more efficiently.

Problems With Benefits

Now I hope I will not be accused of a blind defense of the status quo if I suggest that there are very great difficulties in the application of this model to postsecondary education. The difficulties are clearest, though by no means confined, to the assessment of the "outcomes" or "benefits" of higher education. These "outcomes" take many forms, but their systematic study is almost wholly confined to what can be learned of the impact of college on students. But the effects of "impacts" of the college experience on individual students is enormously difficult to assess for at least three reasons:

First, many of the gains of the college experience may not reveal themselves for many years after graduation, and indeed can only be understood in terms of the whole life and career of a college or university graduate. Efforts, of course, have been made to measure the increment of lifetime income that might be attributable to postsecondary education. But there are serious problems in trying to assess the effectiveness of current programs of education by trying to predict the incremental lifetime income of students now in college on the basis of extrapolations from data on the incomes of people who graduated 10, 20, 30 or 40 years ago. The whole context in which present graduates will be entering the occupational structure and carrying on their career will be quite different from that in which graduates of the much smaller systems of higher education of the past came into the occupational structures of their own times. While some of the differences may be estimated, the unpredictabilities and contingencies in such long-range forecasting of economic development are very great indeed.

Second, quite apart from the delay in their appearance, the effects of higher education may be very subtle and difficult to measure: effects on mind, character, sensibility, competence, horizons and ambitions--effects, that is to say, on the whole range of moral, emotional and intellectual skills and qualities that a person takes with him into his adult life. Moreover, many of these effects, difficult to assess at any time, only show themselves in the individual's life and action long after he has left college.

Third, apart from delay and difficulty of measurement, it is extremely risky to disentangle the specific effects of the college experience from all the other influences in a person's life: his early life experience, his family relationships and his friends, his social origins and advantages, etc., etc.--forces which shape the very same qualities that colleges and universities also try to influence. In the face of these difficulties, efforts to rationalize administration by close measurement of "college outputs" ordinarily disregard the difficulties and measure the short-term measurable.

But over and above these considerations there is another set of equal weight and importance. I think it is fair to say that in most efforts to measure college and university "outputs," these are seen solely as packets of gains attaching to individual students and graduates as a result of their exposure to higher education. And the sum total of the "benefits" of higher education, in this conception, is merely the aggregate of these individual gains.[3] But this is a very partial, a very limited view of the contribution of higher education to social life. Let me suggest some other consequences--surely effects of the greatest importance--that utterly escape the net of cost-benefit analysis.

Society Benefits From Postsecondary Education

One example of gains to a society that transcends the gains to individuals attending colleges or university is the evidence that higher education increases the tolerance of citizens for unpopular political views and decreases the racial prejudice and bigotry that have been such a powerful force for ill in American political and social life. There is considerable evidence on both these matters. And indeed, somewhat more speculatively (and in this area it is necessary to be somewhat speculative) it can be argued that the very great decline in prejudice against American Negroes in the past several decades, and the readiness to support legislation to affirm their equal rights before the courts, in the political process and in various areas of social and educational life have in part been the result of the widespread expansion of higher education during just these decades. There have been many who have predicted a white backlash against the gains of blacks in many areas of American life. But if the backlash has not been more widespread and serious, it may well be because higher education has been systematically undermining the foundations of racial prejudice and misinformation on which such a backlash could be founded and sustained. If that is the case, then the extension of higher education has made a contribution to the national life beyond any of its presumed economic benefits; it may indeed have enabled the country to hold together during our enormous racial revolution.[4]

I mention this only because it is only one of a large class of "externalities"--of consequences of higher education to other than the participants that are not ordinarily taken as "outcomes" to be measured and taken into account in assessing the productivity of institutions or systems. Another example is the impact of colleges and universities on the cultural and political lives of the cities and communities in which they are situated. And still another is the impact of mass higher education on public administration in the United

States. Again, we can see this more clearly overseas where, by contrast, people in the lower and middle levels of public bureaucracies who are, for the most part, not graduates of universities, have very little initiative in the creation or review of public programs and policies. Compare that with the energetic and lively young enthusiasts in the new departments of policy analysis and program review in our state and federal agencies. Their present, and even more important, their future impact on public administration, I'm afraid, will not be adequately reflected in their lifetime incomes, nor counted in the benefits of higher education. And yet, I suspect that mass higher education plays a very large part in the ability of low- and middle-level bureaucrats, in both public and private organizations, to feel able and competent to make judgments and take initiatives on important public issues. While that fact is troublesome for the moment for our public colleges and universities, it is, I suspect, on balance a positive force in American political and economic life.

There are, of course, analysts who will concede much of what I have said and reply that the effort they make in the assessment of the outputs of higher education is worth pursuing and the data they gather worth using even if defective or incomplete. As one analyst in California put it, "bad data is better than no data." In some contexts, however, that slogan translates as "misinformation is better than no information." There is another metaphor that is used to justify incomplete or inadequate data in this area, the image of the visible part of the iceberg as it serves to suggest what lies below. But in icebergs, the mass of what is visible bears a fixed relation to what lies below the surface, a condition not met in the relation of the measurable and immeasurable "outputs" of post-secondary education.

So I think that we must re-examine, and re-examine very critically, the assumption that the same kinds of public program assessments and reviews, using these new tools of rationalized management that seem so powerful when applied to highways, corrections, health care and welfare, are applicable, without fundamental rethinking and reformulation, to the systems and institutions of postsecondary education as well.[5]

The Public or Private Life of Higher Education

One way to think about the relation between public authorities and higher education is in terms of the distinction between the public and the private life of our colleges and universities. The public life of higher education comprises all the plans and decisions that involve others besides teachers and students. It takes in all those discussions of the finance and organization and structure of higher education, hearings of legislative committees, the work of coordinating commissions and state departments of higher education, and so forth. By far the greatest part of what is said in print about higher education is directed toward its public life and toward decisions that involve other agencies outside the colleges and universities--decisions about the size of the system, its costs, governance and the like.

The private life of education is what actually happens in the classrooms, the libraries, the laboratories, at the desks and in the offices--the moment-by-moment, day-to-day activities and interactions of teaching and learning, of teachers and learners.

There are, of course, connections between these spheres, between the public and the private life of higher education.[6] Those connections are rarely direct and almost always more complicated than public discussions might suggest. For example, statesmen of science and congressmen debate national science policy, the professional and semiprofessional journals carry stories and editorials about the proper funding of science and the best ways of administering those funds. These questions capture, and rightly so, the attention and concern of many. But it is not at all clear what the direct impact of these decisions about alternative levels of funding, or the forms of organization of federal funding agencies, have on the actual business of gaining new knowledge in scientific fields. It is likely that the generous funding of scientific research after World War II played a major role in the explosion of knowledge in the United States and in the rise to pre-eminence of American scientific disciplines in the world community.

But with respect to many smaller decisions--for example about the funding formulas for state-supported research or for graduate education in a state institution--the link between the size and character of that support, and the work of a research-oriented graduate department, is not nearly so clear. That uncertainty allows decisions to be made by public authorities without close attention to their real consequences for the private life of universities.

But I would suggest that it is important, and increasingly important the more the state intervenes in higher education, to ask what is the right relation between the public and the private lives of higher education? More specifically, what decisions are appropriate to the sphere of public authority and what decisions should remain within the colleges and universities themselves? There is no more important question in the relation of higher education to the state today.

It is not possible here to explore this very large and difficult question in detail. But it is possible to see and identify some areas of the private life of higher education which have been drawn into the realm of public decision making. We might call these examples of the pathology of the public life of higher education.[7] These issues are characteristically marked by a lack of wisdom in action and by cant in discussion. For example, there is the issue of space use within colleges and universities. There is a good deal of discussion about how space could be or should be used more efficiently. But the concept of efficiency in space use is ordinarily developed without regard for the actual, and not merely the nominal, use to which academic space is put.

There is much talk about good and bad teaching and, in some places, legislative or administrative decisions about the number of "contact hours" that academic men ought to put in their classrooms. These discussions, usually marked by a punitive tone, almost invariably neglect the question of the appropriateness of different forms of instruction in different subjects and levels of teaching.

There is much conventional wisdom about student attrition; it is customarily seen as a waste of public resources and an indication of academic failure of some kind or other. There is little recognition of the nature of either graduate or undergraduate instruction or of the price that is paid in the quality of instruction in some institutions and in some departments for retaining students who are unwilling or unable to meet the requirements of that program.

There is a common wisdom about the proliferation of courses and duplication of academic activities and the supposed inefficiencies therein.

There is much said outside the academy about the right relations of research and teaching, little of it reflecting a detailed sense of the variable relationship of those core activities in different subjects and fields.

In brief, in all these areas--space use, the amount and quality of teaching, student attrition, the proliferation of courses and relation of research and teaching--and in many other areas as well, the public debates and external decisions about these central elements of the private life of higher education are, I believe, on balance mostly harmful. The discussions of these subjects and the decisions arising out of them, carried on by people who are not directly involved in the private life of colleges and universities, are conducted on a level that necessarily neglects the wide diversity in academic life and are informed more by ideologies and prejudice than by information. They do not arise out of a close scrutiny and detailed knowledge of the enterprise and therefore cannot reflect the uniqueness and particularity of the teaching and learning processes. We see here the application to higher education of a mode of public intervention that is perhaps appropriate to other activities and services of public agencies without awareness that no other public institution or service is characterized by the order of internal differentiation of higher education or by its stubborn resistance to being reduced to standardized practices.

Does Academic Innovation Mean Progress?

A good example of this can be seen in public discussions about academic "innovation." I believe that the greater part of the talk about "innovation" and "reform" of higher education is merely a public relations exercise and has nothing to do with anything substantial or important. Colleges and universities undergo constant reform and innovation as they change the map of knowledge and their forms of instruction. For the most part, these activities--at the heart of the private life of colleges and universities--are invisible to anyone not taking part in them and are carried on without benefit of highly publicized grants or institutionalized offices. Every academic subject that I know has been transformed since World War II in its conception of itself or in the way it deals with its subject matter. But these enormously important changes and "innovations" in teaching and learning are rarely visible outside the classroom or discipline. By contrast, I suspect that the more expensive and widely publicized an academic reform or innovation is, the less significant and consequential it is likely to be. When innovations are introduced with much fanfare, they are so primarily to persuade outsiders who are unable to understand the significance in the changes in knowledge and the modes of instruction that are important but less visible. The well-publicized innovation demonstrates that an institution is being modern and is responding "flexibly" to new "needs."

It is not ordinarily recognized, especially among American critics of American higher education, that our system is, on the whole, extremely innovative and responsive to new demands both from within and outside the academy. But anyone who studies English or Continental systems of higher education cannot but be impressed by how genuinely innovative we are. One difficulty is that we tend not to label as "innovative" the greater part of the new things we do--for example, those things done in departments without much fanfare or cost. Indeed, it is ironic that an innovation is not usually an "innovation" unless it is carried out by some officer or committee with that title.

One appeal of big, expensive innovations over many small invisible ones is that the former can be managed and planned for. Small, spontaneous changes, as they accumulate, can be troubling to an academic plan or budget. They come over time to generate demands on resources, or to affect recruitment or retention.

Spontaneity is troubling to planning and to rationalized management, though it has the closest connection to creativity, both in teaching and in learning. And here is a central dilemma of modern higher education.

The trouble, of course, is that this line of argument, about spontaneity and creativity, which is a powerful argument for institutional autonomy and its discretionary use of resources, is *also* conveniently used by academics to justify old practices and privileges that cannot be justified by their fruits in creative teaching and learning. The awkward thing here is that the argument that links institutional autonomy and a high degree of discretion over the use of its resources to the creative spontaneity of its members is *both* true and abused. It is true that where an academic man or woman is genuinely alive and creative, either in contributing to knowledge or in fresh and effective teaching, it is the discretionary resources that are absolutely crucial to him--resources that he cannot yet justify by pointing to their outcomes and hasn't the energy or temperament to justify to managers through proposals that translate what he really wants or hopes to do into a language that they can understand and justify to their superiors. But the central difficulty is that outsiders, for example people in state finance departments, have great difficulty in knowing the genuinely creative academic from the sham who looks and talks just like him. And the outsider may not even be able to tell the difference *after* the resources have been spent, since it is hard to know, and even harder to measure, what constitutes "success" in many forms of academic work. So skepticism about the claims of "creativity" and the need for autonomy grow.

Moreover, the whole of a big system of postsecondary education cannot be managed as casually and permissively as a relatively small elite university. Central administration of complex systems tends to make for more "equitable"--i.e., standardized--treatment of the component parts.[7] Thus, it is increasingly difficult to justify or to maintain different funding formulas and management practices as between different sectors of public higher education. So the funding formulas that are developed to exert high external influence on expenditures in the "ordinary" institutions that make little claim to creativity come inevitably to be applied to those that both claim and even achieve creativity in teaching and research. The development of funding and review formulas for different sectors is, in fact, attempted by public officials who recognize that differences exist. But these differences in our time are under the greatest pressures from public norms of equitable treatment, from bureaucratic preferences for standardized treatment and from the egalitarian spirit that sees all differences as inequalities, and all inequalities as inequities. How then can any differences be sustained as between institutions or subjects in the face of these powerful leveling forces? Part of the answer lies in bad or inadequate data.

Is Obscurity Bad?

A good deal of what has made great universities really creative has been a function of bad data collection. Much of the best as well as the worst in higher education has flourished in, indeed required, a decent obscurity.

Obscurity allows for diverse practices to develop in different fields and areas--for example, in faculty-student ratios, attrition rates, length of time to degree and the like. Subject fields differ enormously from one to another, and even the same subject differs in character between institutions, a fact not widely recognized outside the academic world. But it is almost impossible to develop or to justify support formulas that fully or accurately reflect this inherent diversity between and even within subjects and institutions. Data reveal inequalities, and once seen, they must be either justified or abolished. The tendency, in the face of the egalitarian pressures that define equalities as inequities, is to reduce or abolish them.

Obscurity--the absence of data that allows these academic and institutional variations to be seen and dealt with--allows the survival of functional as well as dysfunctional diversity. It allows, for example, the unauthorized use of space--the appropriation by a small seminar or research group of rooms that do not really belong to them and would, if known, be assigned elsewhere. Obscurity allows for the many things, good and ill, that academic men cannot justify. And obscurity itself depends on a certain degree of trust, both by academic men of one another and by their managers externally. But when that trust has eroded, then public officials want to know in much more detail how resources are being used. And modern management systems, which follow upon the erosion of trust, are marked by a passion for good data, and thus are the enemy of obscurity and of all the practices that obscurity has allowed. A good data system generates a steady flow of detailed and accurate information, shining a bright beam of light into every nook and cranny of an institution, revealing anomalies and inequities and unjustifiable practices. And by disclosing them it goes far toward insuring their suppression. Data about institutions are not at all neutral. They play an active and predictable role in the life of higher education, but one that is not yet even fully recognized by all the participants. It is here, on this new battleground of data systems, where the issues are who reports about what to whom, that we see in the sharpest form the struggle between the public and the private lives of higher education.

Some Difficult Questions

I have not, obviously, been able to spell out the right relations between these spheres, to say what should be managed and what monitored, and what left utterly alone by the state. But those questions are of central importance. I have tried to explore some of the problems in this area and suggest some principles that might guide our joined and continuing search for answers in this most difficult area of public policy. But let me end with some explicit questions on this theme of the relation between the state and higher education.

1. Is increasing control over the forms and functions of higher education by central public agencies or authorities an inevitable concomitant of expansion and increased costs?
2. Is the (increasing) role of public authorities presently a force working against diversity in higher education, in their functions and

standards, their modes of governance, their forms of instruction, their sources of support and their relation to other institutions of society?

5. If so, are these "standardizing" tendencies inherent in central governmental control, or is it possible for central governing and financing agencies to function in ways that sustain and increase the diversity in higher education? If so, what governing and funding structures would have that effect, and what principles of operation would govern their activities? How can efforts to support diversity be sustained against the political pressures arising out of: (a) political and bureaucratic norms which prescribe equitable treatment of all comparable units and (b) growing egalitarian sentiments and policies?

I would add one final question. What are the conditions--the milieu and human relationships--that encourage creative intellectual, scholarly and scientific work in our colleges and universities? If, as I believe, those conditions are rare and fragile, how will they be affected by the broad structural, organizational and political changes that we are witnessing? Should not a concern for the protection of the situations in which creative work of the highest quality is carried on by teachers and students be very high in our priorities? It would be a sad irony indeed if our systems of postsecondary education were to grow and flourish, and then perform all the varied tasks we and the state and society were to ask of them--all, except for scholarship and science. I think that possibility should concern us all very much.

NOTES

[1] See June O'Neill, Resource Use in Higher Education, Berkeley, Carnegie Commission on Higher Education, 1971; and Higher Education: Who Pays? Who Benefits? Who Should Pay?, Carnegie Commission on Higher Education, June 1973.

[2] See Martin Trow, "Some Problems in the Transition From Elite to Mass Higher Education," Berkeley, Calif., Carnegie Commission on Higher Education, 1973.

[3] This is indeed the assumption underlying the work of economists on manpower planning and theories of human capital. See, for example, the essays in Lewis Solmon and Paul J. Taubman (editors), Does College Matter: Some Evidence on the Impacts of Higher Education, (New York: Academic Press, 1973). "Very little empirical evidence exists on external benefits. Economists who analyze public policy toward higher education have shown an increasing tendency to regard the absence of good, hard-quantified data in this area as indirect evidence that no such benefits exist. This may be more a reflection of the deficiencies in the economists' education or the narrowness of their perspective: some things in this world cannot be quantified," Robert W. Hartman, "The Rationale for Federal Support for Higher Education," in Solmon and Taubman (editors), ibid. Similar limitations of perspective mark the work of most psychologists and sociologists in this area: See K.A. Feldman and Theodore M. Newcomb (editors), The Impact of College on Students, (San Francisco: Jossey-Bass, 1969).

[4] It may be argued that a decline in racial bigotry or prejudice resulting from higher education is precisely a gain for individuals. But I am emphasizing the impact of these changes on the political climate and on political institutions and laws, which transcend changes in individual attitudes and sentiments.

[5] For further discussion on the benefits of postsecondary education, see the panel discussion in Part III, p.

[6] Of course, at one extreme, if the society and its agencies were to supply no resources, then there might be no private life of higher education at all, though one suspects that the central activities of teaching and learning would find other homes and the energies behind them would cut other channels: they would go on despite the absence of what we call colleges and universities.

[7] There are also pathologies of the *private* life of higher education: for example, the introduction of political or racial or sexual biases into faculty appointments, student admissions or the curriculum itself; or the intimidation or suppression of teachers and students who hold unpopular views. And there are many others. The pathologies of the private life of higher education have a clear bearing on the pathologies of its public life. But that is not my subject here.

[8] Trow, op. cit.

REPORT AND COMMENTS ON THE NATIONAL COMMISSION ON THE FINANCING OF POSTSECONDARY EDUCATION

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of Postsecondary Education

The National Commission on the Financing of Postsecondary Education has a rather extensive and broad charge, arising from nearly two years of congressional debate concerning the financial health of higher education. The charge also was influenced in part by the rather persistent efforts of another sector of education beyond the high school, which we can refer to as vocational, proprietary institutions or occupational schools, as representatives of that sector attempted to convince Congress that they were a legitimate part of the higher education enterprise.

The Charge of the Commission

After two years of debate, the Higher Education Amendments of 1972 were passed. They contained several significant new programs--very few of which have been implemented to any extent. At the same time, Congress created the national commission because, as I understand it, there were many unresolved issues in the view of most Congressmen. These unresolved issues were placed into a piece of legislation, not with a great deal of coherence, and given to 17 commissioners and a staff to resolve in some fashion.

As we looked at this legislation for several weeks, we recognized it was impossible to do everything in the comprehensive way the Congress wanted it done within 13 months and within the amount of money appropriated for that task. So the first effort of the commission was to decide what it was going to do.

The members of the commission chose to focus on three major efforts. One is a study of alternative financing plans, asking the question what financing arrangements might be best for the postsecondary education enterprise in this nation? The second area of effort was in response to Congressional concerns about whether there was a state of financial distress in institutions of higher education in the United States: If there was financial distress, how could it be identified, how could it be measured and what could be done about it? And the third major area of focus really was not a question--just a charge to the commission: Develop national uniform standards for producing per-student costs annually for differing types of institutions.

Once the commission members had decided to focus on those three areas, they had two other assignments ahead of them before they could begin their work. The first was to identify the scope of their work. "What is the definition of postsecondary education?" and "What perspective, federal or national, should the commission use in its study?" With regard to the latter question the commission decided that it should attempt to view the financing problems of postsecondary education from a national perspective, that is, federal, state, local, private, parent and student. Now this is indeed a difficult task, because to look at something from all of these perspectives at once, and to consider all of the interactions that take place as various people get involved in postsecondary education, presents quite a maze. Nevertheless, this was the interpretation of the charge to the commission.

With regard to the former question, "Postsecondary education--what is it?" the commission looked at postsecondary education and concluded that, for purposes of describing the situation, there are four major categories, the use of which will make it possible for people to understand what the commission is talking about.

The first, of course, is traditional higher education--the two-year and four-year public and private regionally accredited institutions of higher education--roughly 2,600 to 2,800 institutions, depending on how you count them or how many went out of business last week or how many started up last week, with approximately nine million students enrolled in 1972.

The second category contains about 7,016 institutions, according to our last count, with an enrollment of about 1.6 million students according to the best estimates we were able to get. These institutions are recognized by the federal government in some manner or form. They may not be recognized by all federal agencies, but they are recognized by at least one federal agency for some educational purpose. For the most part, they are recognized by these federal agencies so that students may obtain grants or loans and attend those institutions. The largest federal agencies recognizing these institutions are the Veterans Administration and the Social Security Administration.

A third category contains approximately 3,500 other institutions that are not quite so well-defined. They are not, to our knowledge, accredited by anyone, but we know they exist because they told us so. The way we found out about them was by running our fingers through the Yellow Pages. Through a sampling process, we estimate there are approximately 3,500 institutions that proclaim themselves as educational institutions offering programs beyond the high school.

And, of course, a fourth category beyond that--a whole host of learning opportunities offered by churches, schools, civic clubs, organizations and museums of all types, providing a multitude of learning opportunities for some 32 million people annually in the United States.

Obviously, the commission could not analyze this whole conglomeration of learning opportunities and institutions and courses, so we had to arrive at a definition that was acceptable for analysis as well as for understanding what we meant by postsecondary education in general. For the purposes of analysis, the first two categories I described are what the commission is looking at, relative to the financing questions we have been asked to address. These are the traditional colleges and universities that we have chosen to refer to as the collegiate sector, and the second sector, the 7,016 that we have chosen to refer to as the noncollegiate sector. Now I hasten to point out that the titles we have given bear no relationship to the kind of function these institutions perform. For example, there are collegiate institutions in the noncollegiate sector and there are noncollegiate institutions in the collegiate sector--or at least that's what they call themselves.

In addition, there are institutions in the noncollegiate sector that offer degrees--not simply associate of arts degrees, but bachelor of arts degrees, master's degrees and even Ph.D. degrees. Rand Corp. is classified in the noncollegiate sector and currently offers

Ph.D. degrees. There are strange assortments of degrees and awards and certificates and kinds of institutions in the noncollegiate sector, kinds unfamiliar to most of you.

One for example, is a card dealers college. It trains individuals to run roulette wheels and gambling tables in Nevada where gambling is legalized. Another is a diamond cutting school, and it, I believe, has the highest tuition of any institution in the United States. The tuition alone is $4,000 per year. Of course, if you consider the cost of breaking a diamond or two, you can understand why the tuition is high.

So there is a strange assortment of these 7,016 institutions. Their enrollment is relatively small compared to the collegiate institutions you're used to--1.6 million students being spread over some seven thousand institutions.

These institutions are not all run by individuals.

Sixty-six per cent of them are owned by corporations. Of the proprietary institutions, better than half fall into two categories--cosmetology schools and flight schools. And, interestingly enough, it is in these flight schools that most of our commercial airline pilots are trained.

This give you an idea of the complexity of the problem we are dealing with as a commission. We are asked not only to respond to very difficult and large questions, but also to do so across a spectrum of institutions we have not dealt with before. In addition, there are very few data available about the noncollegiate sectors.

Objectives

How did we propose to go about our task? It was our conviction that we had to have some criteria against which [illegible] could evaluate the alternative financing plans. W[illegible]ould not just stack them up and look at them. We had to have some way of making comparisons. So an early task of the commission was to establish those criteria. We called them "objectives for postsecondary education."

Now I would hasten to add that they are not objectives of postsecondary education in the substantive sense. Rather, they are descriptions of the character of the postsecondary education enterprise the commission would like to see functioning in this country. The commission felt that educational programs per se and the relationships between faculty and students that might be considered educational objectives in the substantive sense were properly the responsibility of institutions, students, faculty members and boards when building an environment in which the educational process takes place.

This commission decided to concern itself with characteristics of the postsecondary education enterprise and its public objectives. Those of you who have seen them will recognize that the objectives describe the character of that enterprise.

Some of the objectives are: student access to institutions of postsecondary education; the opportunity for a student to choose among the institutions he has been admitted to, regardless of the price; the opportunity for the student to complete the program to which he has been admitted; the independence of institutions to operate their own programs to meet their own objectives; and, the other side of that coin, the accountability of institutions to funders and to the public for the charge and the resources given to them. You can see that these objectives, against which financing plans are to be evaluated, are descriptive of the characteristics of the enterprise but do not deal with the substance of the enterprise itself.

It was necessary to take these rather idealistic objectives and translate them into something that could be counted or talked about in a quantitative sense.

How do you tell when you've achieved student access in institutions of postsecondary education? How do you tell when institutions of higher education or postsecondary education are excellent? How do you tell when you have diversity? These are difficult problems.

One approach the commission could have taken was to build objectives around measurable data. Instead, the commission deliberately said, "We will set our objectives irrespective of the availability of data to solve our problems." Consequently, we had to face up to the fact that when our objectives were completed we had no data at all in terms of measures for some of the objectives. For other objectives, the data are very inadequate. For some the data are good. In all cases, when measuring the extent to which objectives are met by a particular financing plan, judgment is required.

Judgment is required both in terms of developing the objectives in the first place and in examining the available data. When examining the pros and cons of more subjective kinds of information relative to a financing plan and the accomplishment of objectives, some sort of intuition feel needs to be brought into the judgment. Nevertheless, we have developed criteria that enable at least these 17 commissioners to look at an array of alternative financing plans and to make some judgments about the degree to which those financing plans individually will accomplish the objectives of the commission.

Data Retrieval

In order to look at alternative financing plans, we had to have data. This commission did not want to duplicate the work of previous commissions; it wanted to build on that work. We also did not believe we had the time to go out and start from scratch and collect information that would enable us to respond in an appropriate manner to the charge Congress had given us. Rather, we determined we would go to anyone who had produced helpful information, starting with other commissions, the U.S. Office of Education, the various associations and various agencies that collect information of whatever source. We would obtain from them any information concerning postsecondary education, institutions, systems, students--whatever we could get--bring it together and try to sort it into some kind of intelligent data base that could be computerized so it would be easy to use for analysis.

The commission has been very fortunate in that virtually everyone has responded rapidly and forthrightly. We have been given very up-to-date data compared to that others have had. For example, our work is based on 1972 expenditures and, as far as I know, very few people have had that kind of data available to them. We now have about 15 files in the computer. To give you some idea of the size of this, one of those files is the Higher Education General Information Survey (HEGIS) data for 1970, 1971 and 1972. We also have college scholarship service data in these files, Project Talent data--a full range of both longitudinal and one-time survey data, all information that can be used in some way or other for the kinds of questions that we are attempting to answer. We have made this data base available to those who would like to have access to it until Jan. 1, 1974. From the discussions we are having currently with HEW and members of the Congress, we believe this data base will be maintained and continued next year--and hopefully on into the future. We also hope it will continue to be available to anyone who wants access to it, except when privacy must be protected.

In addition to this data base we needed an analytical capability to look at alternative financing plans. It is one thing to have volumes of data available; it is another thing to get it organized so you can estimate what is going to happen if you implement a certain set of funding policies. The strategy we have developed is to use the data to attempt to project into the future--that is 1977, 1980 and 1985--what the impact of various funding policy decisions would be on student access, student choice, opportunity, the independence of institutions, the diversity of education programs and our other objectives. The quantitative aspects of this work is completely computerized. In 15 to 30 minutes we can analyze from the quantitative aspects a particular set of funding decisions that would make up a national funding policy. This analytical capability is very primitive. We do not look upon it as a sophisticated work of art. We presently look upon it as a very dull ax, but we promise that as others begin to work with it refinements will be made. Perhaps new tools will be devised to give us more precision and better estimates of the impact of funding policy decisions in the future.

Final Report

For some time people have been asking me what the commission is going to recommend. Well, at this point in time, the question is not *what* the commission is going to recommend, but *whether* the commission is going to recommend. The charge to the commission says something about indicating the best mechanisms for financing postsecondary education. Some commissioners currently believe they will have completed their task better if they analyze a wide variety of plans (we certainly have done about 30 of them) and array that information for everybody to see and leave it at that. Others say, no, it is the responsibility of the commission not only to array this information but also to decide which financing plans best accomplish the objectives in the way they would like them accomplished.

Others say there is something in between--that we should indicate our priorities relative to the objectives. For example, at this moment there seems to be a high degree of consensus among the commissioners that the time has come for two years of universal access to postsecondary education. Now if the commission should make this kind of statement, several of the alternatives it is currently analyzing would be virtually ruled out and several others would suddenly get the spotlight.

It may be that the commission will just array the information and leave it at that. It may be that they will decide to select one plan reflecting personal preferences for financing postsecondary education in this country for the next few years. And it may be that they will just indicate the general strategies they think ought to be followed to accomplish these objectives. This decision will be made, I trust, on Dec. 7 or 8, 1973.

What have we, as a staff, found relative to alternative financing plans? We are convinced of one thing: raising the price lowers enrollment. The evidence we have suggests that, on the average, for every hundred dollars you raise the tuition in an institution, you're going to lose something like 2.5 per cent of your enrollment. This is an average; the figures differ among public institutions, private institutions and community colleges.

Another thing we have found is that lowering the price is regressive. If tuition costs are moved towards zero, the middle- and upper-income groups benefit while the lower-income groups receive a smaller share of public funds. We found also that student aid, that is, the current method of subsidizing the student from the federal government level (and probably from the state levels), is a very inefficient way to fund post-secondary education if you are thinking in terms of student access. Let me explain briefly why.

Let us suppose there are three million students in institutions of higher education who are already on some form of student aid, and you decide you want to get another 10,000 in. Suppose you decide the way to get more students in is to add more money, and consequently decide to increase the average student aid grant from $300 to $400. Unfortunately, the philosophy of equity in this country demands that everybody with the same income and financial need receive the same kind of award. You cannot discriminate among individuals in this way. So, not only do you have to give that money to the new students you are going to bring in, but also you must give it to the three million already in the system. Thus, three million students get $100--that's $300 million before you get your first additional student in.

There are ways around this, but they are not socially acceptable ways. We used to practice them when student aid officers would reduce the advertised price on a selective basis to lure certain students into their institution. We used to do it with football players and English students and whatever gimmick we felt was appropriate. But then came the day when social equity became very important. It is no longer appropriate or feasible for a student aid officer to do this kind of thing, as we did in the past. Consequently, it is very difficult to effect student access by adding more monies. We found that money alone will not work.

There are other things that correlate very well with student access and choice, and in particular with the enrollment of lower-income persons in institutions of postsecondary education. What are some of these? Pre-high school counseling and guidance are the kinds of things that may improve access. The students' curriculum choice in the eighth and ninth grades has a better correlation with student access and participation in postsecondary education than does family income. Father's occupation has a better correlation with participation in postsecondary education than does family income.

And now let me startle you even more. Family income has the least correlation with participation of some eight different variables. Consequently, we are convinced that, while money is needed, money alone will not solve the problem. Some effort is going to have to be addressed to the other kinds of problems if we are going to provide universal access and get low-income people to participate in postsecondary education at roughly the same rate as the rest of our population.

Another thing is certain: enrollment competition among institutions of all types is very stiff at the current time. Current enrollment projections do not look good. The present enrollment situation is not very encouraging, and competition for students among institutions has heightened considerably, particularly in the last three or four months.

While there are many difficulties associated with financial distress, I suspect that in the coming two or three years declining enrollment will be the major cause of financial distress. Now, what can be done? Certainly, financial planning arrangements can be formulated carefully with regard to national policy, but from my observations, I believe we are not going to affect the postsecondary education enterprise as much as we thought by looking at reallocation of funds available to postsecondary education. It does make a difference that social forces, political forces and equity forces all are coming to bear, leaving little room to maneuver with regard to a reallocation of the resources to accomplish different objectives. And while we *should* examine that, I think we are going to have to look at other areas to solve some of the problems of postsecondary education.

There is currently a notion, quite well advertised in higher education in particular, that there will not be much more money available to postsecondary education. I think if we are going to live up to a commitment of universal access without losing ground in graduate education, we are going to have to find a way to make more money available. Someone is going to have to take up the banner to persuade people that more money is going to be needed. I am convinced it is out of fear and paranoia that we are saying money is not going to be available, because state legislators and congressmen, have indicated they are not saying more money is not going to be available, they are just saying, "you are not getting money unless you tell us why you need it and give us good evidence of why you need it."

I also think we are going to have to face up to measuring the increase in productivity in higher education. I use the words "higher education" because right now I do not even want to think about trying to make such measures in the rest of postsecondary education.

I suspect there have been productivity increases in higher education in the past. The trouble is, we do not have any way of measuring them or counting them or looking at them or agreeing upon them. We generally have thrown up our hands in horror when we have thought about this problem and said, "There is nothing we can do and in fact we shouldn't measure it anyway, so let's not worry about it." I believe we are going to require more money to accomplish the kinds of things our society needs relative to higher education, postsecondary education and education in general beyond the high school. But we are probably not going to get it unless we demonstrate increases in productivity. I think it is time we stopped wringing our hands about the complexities of that problem and started addressing ourselves to it seriously. Some people are making efforts in this area. They are to be commended, but they need much support if they are to deal effectively with the problem.

"Man's Right to Knowledge and the Free Use Thereof"

And finally, there is one area I think allows some flexibility, though not nearly as much as many people think. That area is management. I want to shift from work of the commission to some concerns of mine. Hopefully, they will be received in a positive spirit, but I suspect they may be viewed as a bit hostile.

The central issue of the discussion about the information explosion and shifting levels of decision making is information management. The decisionmaker needs information for two reasons. The first is to assist him in arriving at his decisions, for they are only as good as his information. The second is to enable him to defend his decisions before the public. Without information to explain his actions and his decisions, the public will not understand him and, in many cases, they will not believe him. The first is the need for management information; the second is the need for management of information. Or, to put it more bluntly, the second can be public relations on the one hand and propaganda on the other.

On the surface, today's controversy over information focuses on the question of management information, but the hidden agenda, the real controversy, is over the management of information. Who shall control the information? Ben Bagdikian in The Information Machines very aptly points out that knowledge always has been a key to power.

Looking for a moment at the political arena, we find that political information traditionally has been restricted to the highest levels of leadership and only later has trickled down to the lower echelon, helping to preserve hierarchial authority. Kings and queens maintained their power by controlling the information available to them and giving it out selectively to those they wanted to share that power with them. When leaders and their constituents begin to receive information at the same time, important things happen in their relationships.

First, the social reaction time is accelerated, speeding the pace of development for both the leadership and the electorate. The leadership must move quickly to stay ahead of the electorate. Second, the dependence of the lower echelon on the higher ones is decreased and power, based exclusively on initial possession of information, is destroyed because virtually everybody has access to power. Third, leadership may find itself at a disadvantage in responding to demands for action. Fast reactions are required when both leadership and constituencies get the information at the same time.

Large institutions like governments and institutions of higher education are, by nature, less volatile than families, Elks Clubs, churches and small organizations that can react very quickly. Large organizations take a long time to react to information. You can see the kinds of problems institutions have when both the electorate and the government (or the person high in authority as compared to the person low in authority) start getting information at the same time. For these reasons, and others, authorities always have attempted to control information for the public good, as they see it.

One method of control is to release deceptive materials. Leaders have special access to channels of mass communication and they can use this to inundate the audience so that truth cannot be separated from fiction. In one sense, the drowning of our people in information is much the same as the ignorance of populations years ago. And in another sense, the drowning of other people in information is even worse than the ignorance of many years ago because it creates the illusion of full knowledge. You have got all that information; you understand everything; what do you do with 20 reams of print-out when you cannot find the one essential fact you need?

But, so far, even the most skilled information control authorities have been unable to exercise mastery over all popular information long enough to prevent the nonestablishment knowledge from having a significant impact. The minorities somehow figure out a way to get in on some information so they can have an impact on the decision making.

Discerning segments of the audience, though surrounded by the noise of propaganda, are able to extract the relevant information. Consequently, the establishment cannot exercise complete domination. This is the dilemma for all institutions. Instant and universal communications disrupt provisional patterns, tempting leaders to restrain the trend, but the needs of a dynamic system make sequestering of information exceedingly dangerous. It is a myth of our time that unfettered dissemination of information produces shocks in a democratic society and that we must somehow censor that information if we are to compete with an authoritarian regime. Quite the contrary.

I believe that information is most hazardous to the authoritarian regime. I believe that democratic societies and democratic institutions are better conditioned to the impact of new information and, therefore, are more stable when it is provided. Further, I believe that the very existence of societies and institutions depends on the free flow of information. A population that requires insulation from uncontrolled information is living in the wrong era.

During the last few centuries, this insulation has become increasingly porous, and the regimes that have used information control to effect social control have lived precarious existences. There have been massive tragedies. Most such regimes have fallen. Those that were dictatorships and were authoritarian either have modified and mutated into something else or they have gone out of existence and they have died. The freedom of information plays a large part in this kind of evolution.

When Columbia University began to make plans for its bicentennial celebration in 1954, it was decided that freedom of inquiry and expression was the most appropriate subject a free university in a free country could choose. Columbia adopted as a theme on which its activities were focused, "Man's Right to Knowledge and the Free Use Thereof." As one of the observances, a graphic exhibit of 60 panels was prepared to explain and illustrate this theme. Mark Van Doren was commissioned to prepare a written commentary to accompany each of the panels. I quote from one of his statements: "And ye shall know the truth and the truth shall make you free." Those to whom Jesus said these words replied that, so far as they knew, they never were in bondage to any man. But it was the bondage of ignorance that their teacher had in view, and the assumption behind the exhibit for which Van Doren used these words is that no man, upon reflection, can fail to understand this.

Thus, I find it somewhat ironic that the very universities that defend truth and freedom so fervently are unwilling to allow themselves to be studied or to release information about themselves. Knowledge, Mark Van Doren says, is like the air we breathe--so essential that we usually take it for granted. Knowledge and the ways in which men use it determine the health of our families, the types of homes in which we live, the jobs we hold, the comforts we enjoy and the whole civilization that surrounds us. "The truth shall make you free." Although the truth by itself may not be sufficient to keep anyone free, the full and free flow of truthful information is clearly necessary to any kind of social and political freedom. Conversely, any serious attempt to abridge that freedom must include an effort to prevent or to manage the flow of information.

To change metaphors, a burglar cannot operate easily or safely in a well-lighted area. Until recently, higher education has had no need to manage, let alone abridge, information flows, for it has had almost complete freedom to decide. But as higher education has moved from an enterprise concerned with an elite portion of our society to an enterprise of mass education, it has moved into a public enterprise. Its decisions do much to make others free or captive. The freedom of higher education needs to be tempered by a concern for the freedom of individuals.

How does this affect us? I believe we must make information more freely available to the public, to our consumers and to funders. We must find ways to explain the benefits of higher education in terms they understand, for when what we tell them differs significantly from what they observe, we strain our relationship with them. To do this, we must develop communications procedures that include standard data definitions, information structures and data handling procedures, for these are the counterparts to dictionaries, sentence and paragraph structures, and syntax and punctuation in our English language. Without these we shall continue to have a Tower of Babel.

Yet, we must fear homogenization. We must fear rigid structures and the rigid curtailment of innovation when we first begin to use this infant language. But modern concepts of information analysis provide greater freedom than we had five years ago and promise greater freedom in the future. Those of us who are not familiar with modern trends in management must become so. Purveyors of simplistic rigid systems must be warned that we expect them to bend their genius to information systems and analysis techniques that will preserve our humanity, while providing us with the information we need. That is no simple charge, but it is essential for our people.

What will the commission recommend in this regard? The commission obviously will consider all recommendations again and probably will make changes. So this is my best guess. It will recommend, I believe, the development of long-range national standards relative to general information to be used voluntarily by institutions of postsecondary education. In the short run, I believe it will recommend interim standards that will be modified by some agencies over time. Such standards are procedures for producing information and are not standards in the sense of some normative kind of thing. We are talking about procedural standards, not normative standards. These interim standards will have to be modified from time to time as the state-of-the-art develops. Incentives will encourage the use of these standards.

The interim standards the commission will recommend first, I suspect, will have something to do with per-student costs by major, by level of instruction and by differing types of institutions. Those of you familiar with the various types of per-student costs will recognize that there are probably, in broad general terms, two types of per-student costs. One in which you take general educational expenditures and divide it by enrollment and one that requires you to use some kind of induced course load matrix and transfer your costing structures over into program form. The commission interim standards are likely to focus on the second type of costs.

You will note that I believe the commission will recommend the voluntary use of these, but will provide incentives to encourage institutions to begin using them, hoping this will improve management and state-level decision making, as well as national policy making. The commission has different expectations with regard to the abilities of institutions of different types to implement these kinds of procedures at this point in time. It recognizes that institutions that are primarily instructional in nature can do these things now with relative ease. It also recognizes that these institutions, having developed costs in a certain manner, can use the very procedures that helped develop the costs to understand the induced effects of decisions made on the basis of those costs.

It further recognizes that to do this in community colleges is more difficult, and that to do it in major research universities is very, very difficult indeed. In fact, the state-of-the-art virtually does not approach the cost development needs of major research universities at this time.

What will be done with the commission's data base? I believe it will be continued. I believe the directors of the commission have found it useful and that they would like to see some agency of the government continue that operation under the following conditions: That this data base be made available by terminal access to any person with only the stipulation that personal privacy be protected. We have found much interest on the part of associations, policy centers and interested representative groups in getting at this kind of information to build their various arguments to defend their own particular decisions. We believe that building a data base is an essential service that postsecondary education needs. I personally believe that policy analysis should be kept separate from this activity and be a decentralized activity, remaining under the jurisdiction of representatives of the various points of view. But I believe also that representatives of those points of view ought to have access to the same data and information, so that at least we are speaking the same language.

Policy decisions in postsecondary education must be made by people, based upon their judgment. But, judgment can be enhanced by good information. Conferences of this sort improve the likelihood of better information becoming available. The sponsors of this forum are to be commended for this effort.

PART II

WORKSHOP SESSIONS

ACCOUNTING AS A SYSTEM

Robert W. Meyer, Vice President of
Business Affairs, Ohio Wesleyan University

Early financial records of one midwestern college indicate that tuition payments were met "in kind." Indeed, one entry shows the receipt of two hogs as payment for tuition. Accounting systems have progressed from this early debit-credit hand-written journals and ledgers to today's sophisticated IBM printouts of the same basic debit-credit ledgers. However, we still seem to be receiving "stock" to help support the institution with values being assigned to the shares at the time of receipt.

Accounting statements have always been a part of the annual reports to the board of trustees. The reports were properly audited and filed by the appropriate committee. Seldom read by the finance committee or the administrative staff, the reports were not intended to do more than meet the requirements of the auditors. The examiners of the reports were more interested in verifying the existence of certain assets and the balancing of the bank statements than in developing a management report. The statements had a single purpose and that was to insure that the records had been maintained in a proper manner. The system to develop the audited statements was kept as simply and cheaply as possible by a treasurer who seldom, if ever, related to the other officers of the university.

From these rather rudimentary beginnings that existed on many campuses through the 1940s and perhaps still exist on some campuses today, we have come a long way in data gathering for the purpose of writing the annual report. Aided by business machines ranging from the 10-key adding machine to the computer, the business manager can speed the process of reporting to anyone and everyone interested in reading the printouts.

Indeed, there has been a real growth in interest in the accounting reports by faculty, students, trustees and state governing boards. The very phrases of "cost analysis," "cost manuals," "uniform systems," etc., were never openly discussed in academe during the expansion of the 1960s. Admittedly, financial data is not the most interesting reading. The academic community has never quite included the business officer as a partner in the management team. Oftentimes the business office has been looked upon as some ogre to be avoided.

To belabor the point would prove fruitless. To admit to the frailty of men to work together is essential in the present context of the financial woes confronting our institutions.

The business manager, through his competent staff, has at his disposal meaningful data which he is willing to share. At the same time, the financial officer should realize that "his" data can only be meaningful if it can relate to the total data bank of the college. For example, "getting out the paychecks" is considered very important by the entire community for a single day. But if the data generated by the routine task is not in a reasonable form for cost purposes, personnel management and budget reporting, the financial manager is truly a bookkeeper and may be beyond retraining.

FIELD TEST OF NCHEMS INFORMATION EXCHANGE PROCEDURES (IEP): PUBLIC COMMUNITY COLLEGES, PRIVATE COLLEGES AND UNIVERSITIES, PUBLIC COLLEGES AND UNIVERSITIES

Robert Huff and Robert Wallhaus
NCHEMS Associate Directors

A major portion of the NCHEMS effort during the past two years has been the development of information exchange procedures to be used by colleges and universities across the nation in developing standard information for exchange and reporting purposes. The definitions and procedures involved in the Information Exchange Procedures (IEP) project have evolved through the work of many task forces and many hours of staff effort. A preliminary set of information exchange procedures was developed early in 1973 and a preliminary field test of those procedures was conducted in some 60 institutions throughout the nation.

The purpose of the IEP project is to create among higher education institutions the capability for exchanging and reporting information both financial and otherwise that is necessary to calculate and evaluate costs (1) by discipline and course level, and (2) by student field of study and student level. The basic promise of information exchange is that the decision making and planning in higher education can be facilitated through comparative analysis of data that are developed through standards definitions and procedures.

Representatives from four institutions which participated in the preliminary IEP field test were brought together to form a panel at the ECS forum in Chicago. The representatives from the institutions included:

Dr. George Angell, President, State University of New York at Plattsburgh

Dr. Vernon Crawford, Vice President for Academic Affairs, Georgia Institute of Technology

Mr. Tom Rawson, Assistant Director of Institutional Research, University of New Mexico

Dr. Nolen Ellison, President, Seattle Community College, Central Campus

The members of the panel made brief statements concerning the difficulties and benefits of implementing the preliminary information exchange procedures on their campuses and then responded to questions from the audience. The sessions were both vigorous and informative.

The representatives of the preliminary field test institutions indicated that there has been significant benefit to their institutions in developing the kinds of information required by the IEP field test project. First, their institutions were stimulated to carefully examine their operational data systems and improve both the efficiency and the scope of those systems. Secondly, for the first time the institutions had available cost per credit hour in various disciplines at various instructional levels (i.e., lower division, upper division, graduate) and annual cost per student in various fields of study at various levels (i.e, lower-division chemistry major, upper-division chemistry major, graduate chemistry major) which could be used for internal comparisons as well as external exchange and comparison. These comparisons have led institutions to carefully examine internal allocation of resources and have served as a basis for discussions about future resource allocation policies. In addition, institutions have found that they are able to explain better their position and resource requests to external funding agencies through the use of the program-oriented cost data and other information. Funders are demanding a higher level of accountability than ever before, and the institutions which have available to them new kinds of information are able to satisfy these requests for accountability and demonstrate that they are doing a better job of managing their limited resources than in the past.

The institutional representatives indicated that there are certain shortcomings with the IEP project in that a span of information which relates to objectives, students, faculty and program outcomes in addition to cost data is necessary if a clear and complete picture of the institution's nature, role and scope are to be understood by those concerned with higher education. Only by coupling a great deal of information with the cost data can one fully appreciate an institution's problems and contribution.

The NCHEMS IEP project will continue to develop and by early 1975 will publish the first edition of the Information Exchange Procedures Manual which will be a culminating document for the project. During 1974, approximately 50 institutions will engage in a more detailed and intensive pilot test of the IEP procedures, and these pilot test experiences are expected to provide valuable input to the development work being done by NCHEMS staff in this area. Through pilot testing and national review of this important product, NCHEMS hopes to remain in close communication with all sectors of the higher education community and, thus, insure that the final information exchange procedures, which it recommends, are closely attuned to the needs and the capabilities of various kinds of colleges and universities.

FLORIDA'S TOTAL BUSINESS MANAGEMENT SYSTEM (UNIFTRAN)

Olcie Harrell and Jack Smith, Associate Directors
Management Information Systems, Florida

UNIFTRAN is a concept related to the development of a total business management system on an interinstitutional basis.

The UNIFTRAN code begins at the transaction level, so that data can flow from there through the intermediate levels at the instituions and on to the state level. It requires a definition of standard or uniform system which will maintain comparability but also speak to institutional uniqueness. Likewise, it requires a project organization which allows input at the operational level from each institution within the constraints of a coordinated effort. The systems that have developed as a result of this effort have the advantage of addressing problems at the operational unit level while providing data for institutional management and higher level reporting.

The approach in Florida used a project coordinator on the board of regents staff and assigned the development effort to task forces comprised of professional personnel fron the institutions. A host institution was appointed to supply the systems and programming support and serve as the pilot implementation site. Official milestones, designated levels, were specified to monitor progress and obtain institutional approvals. Maintenance of completed systems is coordinated centrally to insure compliance with intended uniformity and compliance with technical standards.

A HUMANISTIC MANAGEMENT SYSTEM FOR EDUCATION (BATTELLE)

William D. Hitt, Director
Center for Improved Education, Battelle

USHER is an acronym for "Uniting Science and Humanness for Educational Redesign." The underlying assumption is that the scientific dimension of educational management should be united with the human dimension in order to bring about constructive educational change.

Project USHER is designed to help community colleges "usher in" a new model of educational management to replace the traditional model. This new model incorporates the best of the scientific dimension of educational management and the best of the human dimension. The uniting of the two dimensions constitutes what we are calling a humanistic approach to educational management.

The purpose of Project USHER is to help community colleges implement a humanistic management system.

This purpose is to be achieved by giving each participating college the capability to redesign its own educational system through implementing a planning-programming-budgeting-evaluation system (PPBE) within the context of participative management.

"Redesign" is a key word in the entire Project USHER concept. We do not mean to suggest that an educational system be halted, completely revamped and then restarted on a new course. The comparison might better be made with that of a house being remodeled to fit the growing needs of its occupants while those occupants live in the house and carry on their normal activities. The occupants themselves actually conduct the remodeling but receive professional guidance. In the same way, Project USHER involves the faculty, administration, students, board members and representatives of the general community (with professional guidance) in deciding how that institution can better serve the residents of the area community.

Involvement in Project USHER should provide the participating community college with the capability to carry out the following steps in the overall redesign process:

1. Organize and involve a planning team
2. Develop systemwide objectives
3. Assess needs and establish priorities
4. Estimate revenues
5. Establish a program structure
6. Analyze programs on a systematic basis
7. Develop a program budget
8. Allocate resources on a rational basis
9. Prepare operational plans
10. Develop an information system
11. Implement the operational plans
12. Evaluate and revise programs

After completing one cycle of the redesign process, the participating community college should be self-sufficient in its future efforts in educational redesign. This is the staff's major criterion of success for the project. The redesign process, then, will become the method for managing the educational system.

It should be noted that Project USHER is an application project, not a research project. The methodology has been worked out and the necessary tools are ready to use. The purpose of the project is not to generate new knowledge, but to bring about constructive educational change through the use of existing knowledge. On the basis of past research and our own experience, we are confident that Project USHER is a practical approach to increasing the effectiveness of educational management.

REGIONAL DATA CENTERS: POLICY BEFORE HARDWARE

James L. Morgan, Director
Management Information Systems, Florida

During this workshop session participants learned of the experiences within the Florida State University System in its development of regional data centers for institutional support. In particular, the participants were interested in the details of planning and the interplay that existed between the central staff of the system and representatives of the institutions.

Discussion occurred regarding the implementation of those plans in a state environment with rigid state-controlled public computer facilities. Also covered was the planning and implementation from the viewpoint of the central staff, host institutions and remote institutions serviced by regional data centers.

Directors of both regional and terminal data centers had a discussion on resource utilization and service implications of the regional data center approach and the need for setting of policy guidelines in advance of making operational, the regional centers.

POLICY ISSUES RELATED TO DATA BASE MANAGEMENT

Cheryl Traver, Manager
Data Base Systems, Stanford University

With the advent of cheaper computer hardware, more widely available computer services and a multitude of software application packages, all too many organizations are rushing headlong into the era of data bases and instant information. Unfortunately, most of these organizations will not reap the tremendous benefits of the new technology, not because the benefits are not to be had, but rather because of a general lack of planning and preparation.

Planning is, of course, important in almost any new endeavor. However, the implementation of a data base system carries the potential of affecting widespread and diverse areas of an organization. It is a self-propagating animal which feeds on the insatiable desires of its users. As more is learned about the capabilities of the system and the characteristics of data contained therein, more is demanded. This is a healthy and profitable condition. However, if the foundations upon which the data base was built are weak, these additional demands will overtax the system and the result could be a group of very disillusioned users. To avoid such an event, the long-range goals and needs must be carefully analyzed long before the selection of a data base system, or any other far-reaching computerized project, is made.

The first element to be analyzed is the data itself. The various types of data, both those which currently exist and those which would be desirable to obtain, should be located and their characteristics analyzed. In-depth descriptions of the data need not be detailed in the early stages of planning. However, those data which span traditional file boundaries must be isolated. (An example of this might be instructor course load, which is used for personnel reports and also for student study lists.) These interrelated data may not seem critical in the early phases of a data base system. However, due to the tendency toward the development of more complex analyses and the new capabilities to correlate data which were unavailable in the past, these interrelated data must be structured within the data base in such a manner that future demands do not overburden the retrieval structures and/or security schemes of the new system. All data should be classified according to their "owners" and "users." The owners are those people who can modify the contents or nature of the data--the traditional controllers of the file. The users are those people who are permitted to peruse the data. (This group usually encompasses the owner group.) The complexities of these owner/user relationships must be carefully studied to ensure that the security scheme of the selected data base system will be able to achieve the required results.

Once the data have been analyzed and isolated, the retrieval and maintenance patterns must be identified. These patterns will be used to determine the spectrum of data base features that are necessary and desirable. In addition, they should yield an indicator of the need (or lack of need) for an online system.

Another factor which is critical in planning for a data base system is the "currency" requirement of the data. How current the data in the base must be indicates, to a large extent, the real need for an online maintenance environment. If the data can be a day or week old, a pressing requirement does not exist. (Of course, online maintenance, given that online retrieval has already been justified by need, may be more cost effective and is usually more desirable than overnight batch maintenance.)

Once the characteristics of the data and their usage have been defined, the organization should be in a position to evaluate whether a data base system is feasible, and if so, what type of system is desired.

One of the first decisions must be whether an online environment is needed and to what extent it is desired. Terminal equipment is still rather expensive and must be carefully justified by need (or by enough available funds to justify desire). In addition, the establishment of an online environment is usually a one-way street: very few organizations revert to batch-only systems.

The characteristics of the retrieval and modification patterns should be summarized and condensed into a spectrum of required features (those functions/characteristics which must be facilitated) and a spectrum of desired features (those functions/characteristics which would improve usage and expansion of the system). These spectra may then be compared with those features provided by the available data base vehicles.

A thorough analysis of the available budget and manpower for programming and support must be done, both for the current time period and for several years hence.

By comparing available resources and desired characteristics with costs and offered features, the organization should be able to find a suitable data base system (or to decide that any such system is beyond the current scope of feasibility).

Even though the organization has classified its data needs and selected a data base system, a live data base should not be established until the foundations for management of that data base have been well established. In most instances, the key to such management is a strong and capable Data Base Administrator (DBA). It is most important to groom a powerful and influential person before a lack of standards and procedures becomes a way of life. Thus, the organization must find the right person, pay him well and keep him happy. The DBA must be thoroughly trained, both in data base techniques and in the idiosyncrasies of the organizational substrata and data. In the long run, it will prove most beneficial to set up the means for his influence to be widespread and his authority respected, and to be certain that he remain at the forefront of all data base activity and design. (And should he not perform as desired, a new DBA must be found before the carefully established procedures deteriorate.)

Due to the tendency of data base functions to cross more and more of the traditional file "owner" boundaries, it is important to establish centralized control over data element definitions, file-to-file interfaces, codes and common data. Once permitted to proliferate, individual procedures for maintaining shared data can bog the entire data base system with costly translations and conversions and even make it impossible to correlate logical data between functional areas.

Because the intent of any data base system is to make more data accessible to more areas in more flexible ways, the traditional owners of a given set of data can no longer lock their cards or files in their offices and thus be assured that no unauthorized use occurs. The data base system must then provide a security scheme to fulfill this function. Due to the general lack of trust in computers by noncomputer-oriented people, it is very critical that confidence in the security of their data be gained--and then maintained. For the same reason, the stability of the system and of the data must be safeguarded.

Once the procedures for sustaining a data base have been established, the organization can begin to implement its own data base. Normally, this will be a gradual process, with various areas being introduced into the data base one at a time. Provided that the centralized control mentioned above is strictly maintained, very few conflicts should arise as the data for additional areas are added. Staggered implementations also enable the newer systems to be designed in light of the known strengths and weaknesses of former systems. In addition, less manpower is required.

Regardless of whether or not the data are introduced to the base in phases, the development of the system for each area should follow an implementation plan:

- Train the analysts in data base concepts, the use of the specific data base system and the characteristics of the application area(s)
- Study the selected application(s) and design the system
- Build the data file(s)
- Prepare management with test files and demonstration vehicles
- "Program" the system according to the data base system requirements
- Prepare the users with extensive training, support and enthusiasm
- Monitor the results

Once the data base system and its first application have been introduced, the organization must be willing to expend the effort to permit further development. Data base systems are not turnkey systems which operate in a similar way from their inception on. Instead they are--one could almost say--temperamental and highly influenced by the desires and whims of their users. And perhaps the highest compliment to a data base system design is an ever-widening stream of additional requests from a user who is learning to use his system.

(EDITORIAL NOTE: The presentation at the workshop was developed from a paper presented at the 18th Annual College and University Machine Records Conference, April 30-May 2, 1973, at the University of Wisconsin-Milwaukee.)

CONNECTICUT/IBM SHARING OF RESOURCES

Francis J. Degnan, Research Director
Connecticut Commission for Higher Education

The Connecticut Commission for Higher Education has received and approved a Study Report and Information System Plan for the system of higher education in the state. Implementation of the plan by two pilot colleges was started on June 1, 1973, with a final decision on the feasibility of the proposal planned for July 1974.

The proposed plan incorporates the following concepts in educational administrative data processes:

1. A statewide integrated information system serviced by a large centralized processing unit with remote job entry and interactive terminals on each campus;
2. Commonly defined elements with the planned development of a data base/data communications system in a virtual memory computer controlled by a vendor-supplied data management system;
3. A single entry data system with files maintained on each campus at the source of the data and with direct access to predefined

elements provided for the commission;

4. Software developed centrally to produce reports needed for decision making in the local, central office and commission levels.

The system is campus-oriented, with the management of the total system under the control of an executive committee with decision-making power. The executive committee, with representatives from each of the operating college units and from the state central data processing authority, received professional advice from subcommittees of the data directors drawn from each of the campuses. A long-range plan incorporating a step-by-step development of each phase starts with WICHE data elements and NCHEMS program classification structure. Planners anticipate the development to span a period of five years.

COMMERCIAL SYSTEMS: ANOTHER OPTION

Freeman Holmer, Vice Chancellor
Oregon System for Higher Education

In the management of postsecondary education, planning for new automated information systems requires a series of decisions about the scope and content of the needed systems and whether to build such systems "in house," acquire them through exchanges (such as CAUSE) or lease or purchase them from commercial vendors.

The tendency for many of us to view the in-house option as preferable is defensible on two grounds:

1. The development of systems tailor-made for local needs; and
2. The assurance that the local knowledge about the system is retained within the organization.

The use of exchanges is helpful, but it is essentially a variation on the in-house option.

The lease or purchase of commercial systems is, however, an option that is being exercised with increasing frequency because it appears in many instances to be cost-effective. The problems for management in making a decision to take this route involve the resolution of a series of issues.

This workshop was conducted in order that three objectives might be achieved:

1. To identify and define the issues with some precision. (e.g., what are the preconditions for considering commercial systems?)
2. To explore the means of identifying and selecting qualified vendors and evaluating their products.
3. To consider the conditions of successful interface with a commercial vendor. (After the commitment to lease or purchase, what are the necessary steps to assure the success of the systems installation?)

INSTITUTIONAL RESEARCH AND PLANNING PROJECT, COUNCIL FOR THE ADVANCEMENT OF SMALL COLLEGES

William A. Shoemaker, Project Director
Institutional Research and Planning Project
Council for the Advancement of Small Colleges

The Institutional Research and Planning Project is a pilot effort involving 15 colleges. Its purpose is to assist these colleges to establish offices and functions of institutional research and planning. As we begin the second year of the three-year project, we feel that it is beginning to have a substantial impact on the planning and decision-making processes on the campuses and the kinds of data that are being used to make decisions and to do planning. The colleges in the consortium are spread all over the United States, from New England to Texas to California. They are what have been traditionally known as four-year liberal arts colleges and range in size from 500 to 1,500 students. The project is funded by HEW/Office of Education, Bureau of College Support, Title III, which provides support for developing institutions.

It is the intention of the project to pilot test a variety of management concepts and systems related techniques with regard to their suitability for use in postsecondary education, and specifically in small colleges. Seven areas of concern on which the program is focused are reviewed in this paper.

The Need for Information

The first concern of the project was to determine whether or not there was a need for data to be used in management and planning, what the specific areas of needs were and to identify priorities.

An Institutional Needs Assessment Form was developed. Information was collected from administrators and administrative staff and the form was used as background for a planning session with the administration. Critical needs were identified from suggested areas where it was considered possible that data and new management and planning techniques might be of assistance. These areas of needs were then ranked according to institutional priorities and became the objectives for the first phase of the project.

One of the most striking aspects of this initial diagnosis was the homogeneity of needs represented in the 15 institutions. There was an 80 or 90 per cent overlap of areas of concern and the only important variance was with regard to the priority ranking. These areas of concern became the subjects for the training program and the focus of the first phase of the project.

In addition to a general orientation to institutional research, principles of research design and statistical tools useful for institutional research, the first year of the program focused on the following areas:

Cost Analysis of the Academic Program

The Use of a Planning (Process) System

The Development and Use of Measurable Objectives

The Design and Use of a Data System to Support the Admissions (Recruitment) Office

Data to Monitor and Analyze Student Attrition and Retention

Faculty Evaluation--Methods, Forms, Procedures and Objectives

Cost Analysis of Student Development (Personnel) Activities

Faculty/Staff/Administration/Student Ratio Analysis

The Use of Market Analysis and Marketing Techniques in Small College Planning

Personnel Policy, Procedures and Data Necessary to Satisfy Contemporary Requirements

Modular Development of a Management Information System (MIS)

Wherever existing systems or subsystems models appeared, or claimed, to be suitable for institutional needs, they were analyzed for feasibility of implementation. Very few were assessed to be satisfactory due to a variety of reasons. These reasons included lack of hardware, lack of sophisticated personnel, length of time needed for start-up, design inadequacies and inflexibilities, cost, and inappropriateness to existing management philosophy and procedures. The simulation feature of most electronic models impressed most administrators as not serving their immediate needs--but perhaps helpful later in the project. As a result, the project was geared to the development of a comprehensive management information and planning system in an evolutionary way.

This modular development of a system permitted special focus on the resolution of priority needs during the first year. In most instances, this resulted in a gradual building of confidence in the value of hard data and an improved understanding of its place in the management and planning of the institution.

The design for each of the modules was based upon specific institutional needs. The administrators and administrative staff who were responsible for each of the areas receiving special attention were involved in the training program and on-campus implementation of the research study. (This proved to be very valuable--see Involvement of On-Campus Personnel.)

The design for the study tended to become an integral part of the operating and planning procedures of the department and encouraged a more rational base for decision making and planning throughout the institution. The department was encouraged to alter forms and procedures so that the focus of the institutional research effort was not a one-time thrust, but a continuing information system for each area--and eventually the whole institution.

Design adjustment also became a rather simple thing, therefore, because the personnel understood the initial system and feedback to it was a normal part of regular operations.

The greatest potential weakness of modular development of a management information system is the lack of appropriate interface between modules. Special attention has been given to the clarification of relationships between units, the recognition and reduction of duplication, the importance of common data elements, the relevance and importance of information in other departments, and the need for a tentative and ultimate institution-wide design.

The project has also called attention to the importance of suprasystem interface, by attempting to introduce the concepts and techniques of market analysis and marketing as it relates to program and curriculum development, student recruitment and student attrition problems.

Paper and Pencil Models

It became apparent very early in the project that the complex electronic models were not suitable for the institutions in the project because of their limited financial resources and personnel for implementation. In addition, most of them did not have a computer on campus, or else the hardware was unsuitable for existing models. There were also problems of design as well as general acceptance of the concept. In the opinion of the author, it must also be said that the larger electronic systems still are substantially unproven with regard to their suitability and usefulness for most colleges of our type.

The attitude and operating base that we have taken in the project is that the data will be manipulated by paper and pencil and electronic calculators until the volume and complexity of the data, and/or the speed with which administrators and administrative staff desire to manipulate it, requires electronic implementation. At that time, existing comprehensive electronic systems will again be assessed with regard to their suitability or models will be developed to handle the data that the institution has determined it needs. Several of the institutions in the project are now at the point of evaluating existing systems. On the other hand, several other colleges have found that they have been able to develop paper-and-pencil Induced Course Load Matrices and simple simulation models, which are usually thought of as only possible electronically.

Involvement of Institution-Wide On-Campus Personnel

The modular development process, which has included the in-depth involvement of administrators and staff from each of the departments of the college under study, has proven to be an extremely positive dynamic for the acceptance and use of data. The suitability of data can be taken for granted when it is developed by people who use it, under the direction of experts in the field. Another natural consequence is an in-depth understanding of the data and design.

An observable tendency, however, has been for the design to be somewhat simplistic, limited to crisis needs, and not anticipatory with regard to long-range planning and subtler needs. To resolve this deficiency, the training programs of the second year of the project are focused on each of the traditional areas of the college respectively. One of the purposes of this is to assist the director of institutional research (DIR) and on-campus personnel to think of their area and its supporting data system in a more comprehensive way.

The Importance of the Planning Process

Good management and planning requires not only good data, but a prescribed process of what data is available to whom, when they have the opportunity to use it, for what purpose and at what place in the institution's management and planning process. The process must provide for the social, psychological and political needs of the institution and take into account the style of the administrators and the psychological needs of campus personnel.

Existing process systems were of some help in this area. Especially the Planning, Budgeting and Accounting System, Part II, developed by Peat/Marwick/Mitchell and Co., and distributed by the National Association of College and University Business Officers (NACUBO), has proven to be suitable for small college use. Some aspect of the process (data forms, sequence of activities, timing, etc.) almost always has to be adjusted to satisfy the needs of a particular campus, but the basic elements of the process are included in the model.

Some colleges have preferred to design their own processes so that they better suit their administrative structure, committee assignments and calendar, and satisfy the needs of the era of the institution in which they find themselves.

On some campuses it has been possible to clarify weaknesses in the existing process by merely graphically displaying what currently exists. Inadequacies have sometimes unconsciously developed through the years, or more frequently, they reflect administrative structures and procedures that are no longer suited to the problems and challenges of the seventies. PERT-like arrow and block diagrams reveal no origin in goal establishment, program planning and cost analysis, and inadequate feedback loops for budget review, budget control mechanisms, long-range planning, faculty and staff involvement, etc.

We strongly advocate that the planning process merely be an extension of the budget development process. The suggestion is that planning should not be some ethereal activity resulting in a vague statement of intent, but it should result in the production of an actual budget for the coming year, as well as resource allocation priority commitments (budgets) for two and possibly five years ahead. These extended projections, of course, will be reviewed and updated each year.

Other Management Techniques

In addition to the design and/or implementation of transactional (operations) systems, planning systems, process systems and simulation systems, the project has looked for and attempted to implement any other management techniques which seem to be suitable for small college use. These include:

Institutional Climate Analysis

Goal Identification and Clarification

Management by Objectives

PERT and CPM Techniques

Cost Analysis

Cost Efficiency (Cost Benefit) Applications

Market Analysis Applications

A Data Model for Regional Accreditation and Review

Marketing Techniques

Curriculum, Program and Service Alternatives

Sensitivity (Human Relations) Training

The results of these efforts vary and many are still in early stages of implementation, but most appear to be having substantial direct or indirect effect on institutional planning.

Implementation Methodology

Several of the methods used to assist colleges in their implementation of management and planning techniques will be carefully evaluated. If the pilot project has the impact on participating colleges that we hope it has, then we want to know what has been of the greatest benefit in helping the schools to implement and use new management tools. The purpose, obviously, is to give us direction for how to best help an ever-increasing number of small colleges that are requesting information and assistance in this area.

1. Consortium: Is it best for a group of schools to work together on the implementation of new management techniques? Indications so far are that this has proved to be tremendously helpful and the colleges and their personnel have gained greatly from sharing both positive and negative experiences. The 15-college-unit appears to be of manageable proportions and permits reasonably sized groups for orientation and training programs.

2. Systems Models and Products: Specific systems and subsystems models and systems-related techniques that are being implemented on the various campuses will

be carefully evaluated for the purpose of determining their possible use in other institutions.

3. Institutional Structure: Careful attention is being given to the general administrative structure and style, as well as the place that the director of institutional research or coordinator of planning has in both the official organizational chart and in the communication and planning process of the institution. Our preliminary impression is that this structure will have to vary with administrative and institutional needs and styles.

4. The Role of the DIR/Planning Coordinator: This also appears to vary substantially with the needs of the institution, the style of the chief administrator and his staff, and the personality of the DIR. Effectiveness, i.e., change in the use of data in the planning process, does not appear to correlate with any one role model, although some activities and methods do appear to be more helpful than others.

5. On-Campus Consultants: Each participating college has available to it expert consultants and experienced practitioners in almost any area in which they desire to have help. While this means of assisting implementation has been of substantial help to a few of the schools, it has not been consistently effective. Several institutions have made very little use of it and others have not had helpful experiences.

6. On-Campus Supervision: While the perspective of this reporter might possibly be biased, my preliminary analysis is that this is an almost indispensible aid to implementation. Aside from the obvious benefits of identifying common and individual needs among the participating colleges and coordinating the program with these needs, it appears to be helpful to just have someone "looking over the shoulder" of the campus personnel who are responsible for the implementation of new management tools. On-campus visits, regular reports, assistance in identifying

consultant help and some direct technical aid all appear to make this an important part of the project.

7. Financial Subsidy: Because the colleges have such limited resources, it appears to be almost a necessity that they have some financial assistance during this "start-up" period. Extra expenses for DIR and research assistant salaries, travel to institutes, consultant training and supervision costs, etc., are rather difficult to incorporate into ever-tightening budgets.

8. Training Program: Aside from the obvious value of the technical cognitive material, the training program has proved to be the real backbone of the project. The esprit de corps among the DIRs has to be rated very highly as a strong positive influence. The free sharing of information and experiences, the motivation to report on new projects and an openness to be critiqued by one's peers, are all indicators of the supportive relationships experienced through this methodology. A decreasing amount

of time is being spent with stand-up lecturers and more case studies of institutional implementations are being presented for critique by experts and peers.

9. Independent Evaluation: The design for an independent evaluation has been established by a group of experts in the field. Forms and procedures are being established to assist in the entire evaluation effort.

List of Other Project Products and Analyses

Information Needs Assessment Form

Comprehensive Report of On-Campus Activity

Training Program Outline

Director's Preliminary Analysis of Factors Related to the Effectiveness of the Project

List of Typical Studies in Project Colleges

Ideal DIR

COLLECTIVE BARGAINING INFORMATION NEEDS

Richard Spencer and Donald Gillette
Community College of Philadelphia

The Cost Estimation Model (CEM) system was developed by the training and implementation unit of the National Center for Higher Education Management Systems (NCHEMS) at the Western Interstate Commission for Higher Education (WICHE) for the purpose of training in the use of simulation models. The system provides a comprehensive computer model devoted to projecting institutional and noninstitutional costs of an institution for a period of five years. CEM was developed to accept actual institutional data, thus allowing the users to see and evaluate the outcome of their realistic decisions. In accepting actual data, allowing the model to closely represent reality, the system serves a three-fold purpose:

1. Aid in developing analytical skills in the user.
2. Develop an appreciation for the complex

interaction of an institution of higher education.

3. Allow the user to evaluate and determine the value of simulation models for planning and decision making.

Data collection for the CEM was developed from existing student and faculty files and compared with the official audited expenditure report for the appropriate year. The model was first validated with 1970-71 data and updated as information became available. The model has been used for long-range planning, financial planning, new campus planning, staff training and labor negotiations. The college is presently implementing WICHE's Resource Requirements and Prediction Model 1.6 to replace CEM. The models are practically a complete management information system.

Negotiations for the second contract between the Faculty Federation and Community College of Philadelphia began in January 1972. The main issues were considered to be faculty load, class size and salary.

The board of trustees was constrained by a fixed cost per full-time equivalent (FTE) student as determined by state legislation. Further, any raise in costs would inevitably be reflected in student tuition. The strategy of the board's negotiating team was to utilize factual data to inform the faculty negotiating team with the expectation that reason would prevail and a reasonable contract would result.

Data provided by the CEM proved to be the backbone of the strategy. The CEM provided the necessary "what if" situations, such as the effect of reduced load and current class size on total costs. Faculty negotiators were impressed with, if not totally convinced by, the information provided by the CEM. When impasse occurred, the CEM data were shared with state mediators. The final agreement provided for a reduction in faculty load and an increase in class size. Faculty salaries were settled at 5.5 per cent across the board in compliance with federal guidelines.

In collective bargaining, negotiators for each side usually find it necessary to establish credibility. Faculty negotiators can be accused of speaking for self-interests, rather than bargaining unit interests. Similarly, board negotiators can lose, or fail to gain, credibility if faulty data are used. During these negotiations, the CEM proved to be invaluable in lending credibility to board negotiators and helped to establish a problem-solving approach in situations which may have been otherwise tense and conducive to anxiety. The ability of the model to provide hypothetical situations encouraged both sides to agree upon a three-year contract.

STATE FORMULA BUDGETING (OKLAHOMA)

Edward Coyle, Vice Chancellor
Oklahoma Regents for Higher Education

The decade of the '60s was a period of unprecedented growth and change in higher education, both in Oklahoma and in the nation at large. The number of students in Oklahoma public colleges and universities more than doubled, going from 45,000 to 92,000 over the 10-year period. During the decade, programs and functions of institutions began to change from traditional, lock-step, imitative types to a variety of programs and functions designed to meet the rapidly changing, increasingly technical and resource-demanding educational needs of today's society. In 1960-61 the regular educational and general operations budget of the Oklahoma State System of Higher Education was $41 million. By 1970-71 this annual budget had increased threefold to $123 million.

Against this background of explosive viability of Oklahoma higher education, the magnitude, complexity and importance of determining and effectively communicating budgetary needs is vividly apparent.

The Oklahoma State System of Higher Education was created by amendment to the Oklahoma Constitution in 1941. The state system includes all institutions of higher learning supported wholly or in part by legislative appropriations.

The constitutional amendment which created the state system also created the Oklahoma State Regents for Higher Education as the coordinating board of control of the state system. The state regents' principal duties are to prescribe standards, determine functions and programs, grant degrees, recommend budget needs to the legislature, determine fees to be charged students, allocate to the various institutions funds appropriated in lump sum to the state regents by the legislature and to function generally as a coordinating agency for the unified state system.

Each institution in the state system has a governing board which operates the institution in carrying out the functions, programs and other responsibilities given the institution by the state regents.

Oklahoma fiscal laws provide for funding on an annual cash basis. Higher education receives operations funds for educational and general budgets from general revenue funds appropriated by the legislature to the state regents and from student fees and other campus-collected revenues for educational and general purposes. The state regents allocate these funds to institutions according to needs and functions.

A budget formula is a device for estimating future financial needs of colleges and universities based upon projected basic data concerning enrollment, functions and programs. Certain cost relationships are determined for the future operations based upon evaluation of past costs and projected future costs.

A budget formula for the Oklahoma State System of Higher Education was first used in 1951. The purpose of the budget formula was to give greater objectivity to the determination of needs and to enhance the equity with which budget requests for the various institutions were made. The budget formula in Oklahoma is based upon an estimated level and type of activity as dictated by the assigned functions and programs of each institution and projected enrollments. These factors are translated into the number of teachers needed. The salary cost of the needed teachers becomes the basic factor in the budget formula. A predetermined cost relationship between the teacher salary cost and supporting instructional needs, when applied and added to the teacher salary cost, provides the formula budget base. Predetermined cost relationships between the budget base and each of the other budget functions of the institution complete the formula for determining the total financial needs. Because of the use in Oklahoma of functional classifications which are generally used for budgeting and reporting purposes throughout the country, the level of needs may be compared with other institutions across the nation.

Advantages of the Oklahoma formula budget include the ease of communicating bases upon which needs are determined, ease of comparing budget functions between institutions and flexibility permitting application to all types of institutions. Disadvantages include its inability to provide adequately for cost differentials among programs and difficulty in adapting to needs of institutions adjusting their programs to provide the rapidly changing educational services required by society.

The state regents have begun a change in the procedure for identifying the need for funds at institutions from a budget functional basis to an educational program basis. It is the purpose of the new procedure to relate the need for operating funds directly to educational programs of study offered at the institution. Research and study regarding costs of educational program operation at institutions in the state system and in the region over the past few years have permitted the state regents to move forward in the fiscal year 1973-74 on an experimental basis of educational program budgeting for three institutions. It is expected that the budget recommendation for all institutions to be submitted to the 1974 Oklahoma legislature for the fiscal year 1974-75 will be prepared on the basis of the new procedure.

PROGRAM INNOVATION WITHIN TRADITIONAL MANAGEMENT SYSTEMS

Joseph Butler, Director
Management Information Systems
Governors State University, Illinois

Although the education community has continuously altered and updated its administrative policies and procedures in view of changes in the educational program, the rapid changes in the 1960s caused considerable tension between the educational program and its administration. One facet of this was and continues to be the collision of the traditional with the nontraditional, and new approaches to delivering full secular education, new grading practices, greater flexibility in meeting student career requirements are but a few of the many factors which represent new challenges and scrapping of old modes for those who are responsible for administering management systems in a college setting.

Discussion for the workshop was conducted with the following topic focus:

- Objectives for data system utilization
- Flexibility and compatibility in design of data system
- Responsibility for data system management

EXXON FOUNDATION PROGRAMS IN MODERNIZING COLLEGE MANAGEMENT

Walter Kenworthy, Program Manager
Exxon Education Foundation

The foundation's objective is to raise the level of managerial efficiency and effectiveness in institutions of higher education in the United States so that they may retain their diversity, vigor and independence during the present period of rigorous financial constraints. To do this, we have implemented:

1. A five-year program of grants designed to assist in the adoption of sound, modern systematic management practices by approximately 60 private colleges.
2. A study of the characteristics of management information systems and their applicability to specific types of institutions.
3. A thorough investigation (undertaken by Dr. Alexander Astin) of the behavioral patterns and behavioral changes that

characterize a college before, during and subsequent to the implementation of new management practices.

4. The dissemination of information on college and university management obtained from these studies and project grants.

Since the program is experimental in nature, it has been limited to four-year, private institutions because these are less complex administratively than large private universities or state institutions. While it is assumed that the needs of individual colleges will differ, the foundation assumes that modernizing the college's management practices will include: (1) a clear redefinition of all authority and responsibility within the institution; (2) a clear definition of the objectives of the institution and its constituent units; (3) a system of continuous comparison of achievements to objectives; (4) a system requiring a review of all possible options before a decision is made; and (5) a management information system capable of projecting the financial, personnel and physical space allocation consequences of each option being reviewed. It is also assumed that the new management practices will focus on the educational division of the college because that is the area in which the most important financial decisions must be made and, at the same time, is the unit least likely to follow sound management procedures.

PART III

PANEL SESSIONS

PANEL ON THE BENEFITS OF HIGHER EDUCATION

MODERATOR'S INTRODUCTION

Paul Taubman
Professor of Economics
University of Pennsylvania

The Panel on the Benefits of Higher Education is one of several groups established by the Board on Human Resources of the National Academy of Sciences. The charge to the panel is to examine the evidence, or what all too often is the lack of evidence, on various types of benefits of postsecondary education. By benefits we mean effects or impacts, some of which are positive and some negative. Given the wide variety of benefits and the people who study education, the panel was deliberately organized to span a number of disciplines by including people from economics, sociology, psychology, history, education and, to help keep us honest, physics. We have sponsored a conference that considered some of the benefits and have recently had it published under the title, "Does

College Matter?" The panel is not particularly snobbish and would like to communicate its findings to policymakers and laymen.

I think all the members of the panel are convinced that college education changes the individual. Some of the changes are good, others bad and some trivial and others potentially important. The talks we have arranged for this conference derive from a particular framework. First we think the changes occur both because of the educational process and the institution. The first type of change is probably self evident,and so I will only mention cognitive and noncognitive development. The institutional consequences are perhaps not so obvious. In this category, I would include such things as the effects of the nonclassroom organization of the college in the development of the student. I also would include the impacts of a college on the aspirations, culture and life of a community, and the impact of a groups of trained observers of society on the functioning of society.

Our second theme in the division of benefits relates to three groups, the individuals who are educated, a small subset of people who come into contact with this person, or society at large.

It is important to note in this study of benefits the degree of hardness and softness of the evidence. Hard and soft are not inherent qualities of the problems studied since much of the evidence in the monetary benefits to individuals has been developed and refined only in the past 15 years.

Finally, let me conclude that many people in higher education are concerned with having an efficient allocation of resources. To me, as an economist, such efficiency involves getting the highest value of output for a given expenditure as well as deciding on how much to spend. The papers that follow will be concentrated only on the benefits and exclude expenditure levels.

THE NONECONOMIC OUTCOMES OF HIGHER EDUCATION

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University of Washington

College graduates differ in a variety of ways from their age mates who do not go to college. Perhaps easiest to demonstrate are the differences in knowledge and skills and the fact that college graduates enjoy higher earnings, occupy more prestigious positions and contribute more to the economic welfare of their communities and the nation. These are the kind of outcomes that can most readily be stated in quantitative form.

There are also other differences of a cultural, civic, sociological and psychological nature that are hard to quantify. That these differences result, at least in part, from the college experience is an article of faith on any campus and a major reason why taxpayers are willing to support higher education. If this faith is well founded, it seems clear that these benefits should be included in the educational balance sheet of a college or university so they can be given proper weight in judging its performance. How much weight these sociological and psychological differences should be given must be determined by value judgments, but those judgments, in turn, should be strongly influenced by the nature of the evidence concerning their importance and magnitude.

The evidence from a large number of research studies is clear enough in indicating that significant and sometimes substantial differences between graduates and nongraduates do exist. College graduates are more likely to vote and they are better informed about the issues involved. They participate more actively in voluntary ogranizations and occupy more positions of civic and cultural leadership. They are less likely to be involved in crime, but more likely to be interested in literature, science and the arts. They make better use of available health facilities, plan their families more effectively, enjoy happier marriages and are more concerned with the intellectual and psychological welfare of their children. They are more consistent, more rational and better organized in their attitudes, values and behavior. And in their thinking they are more critical, objective, open and flexible. In short, they are better parents, better citizens and more effective community leaders than their age mates who have not gone to college.

Because these are all statistical or probabilistic rather than absolute differences, it is easy to find exceptions. There are scoundrels with several academic degrees and pillars of the community with none. Yet in general there is no uncertainty about the existence of the differences.

Uncertainty does arise, however, on some other points. One uncertainty concerns causation. When one compares the changes that take place in college students with those that occur in their age mates who do not go to college, it is often found that both groups show changes in the same direction. For example, both groups become more independent of family ties; in both groups earlier religious beliefs tend to weaken; in both groups a number of values and attitudes become more crystallized and coherent; and both groups become better qualified for their adult responsibilities. In other words, both are growing up and becoming more mature. Although the direction of change is the same, the amount may be quite different and is often appreciably greater among college students.

Much of this is as we would expect; young people do mature, and while colleges may be strongly influential, they have no monopoly on the forces that affect social and intellectual maturation. Thus we are left with the difficulty of deciding how much of the difference between graduates and nongraduates should be credited to the educational experience per se and how much to the earlier influences that determined which young people would go to college. Research evidence does not yet give a very satisfactory answer to this question, but techniques are available to secure better evidence.

A second uncertainty concerns the allocation of the benefits. The differences are partly personal, of benefit to the individuals themselves, and partly social, of benefit to society as a whole. I am not aware of any convincing analysis that tells us how much of the difference between graduates and nongraduates should be considered as personal benefits and how much as benefits to society at large. This is a problem that requires further analysis.

Both of these uncertainties take on an additional complication when one tries to compare one college or university with another. Some of the social, cultural, civic and personal changes that take place during and after the college years seem to be relatively independent of the type of college attended. Perhaps this is what we should expect. On any large campus, students, faculty members, educational programs, living arrangements and other environmental influences are so diverse that the differences within a single institution may mask the average differences between institutions. But this is not always the case. Some of the changes are substantially different in different institutions. And it seems likely that there are significant differences among the several parts or subenvironments of a large and complex institution.

Because half our young people are not going to some type of college, it seems to me that it is now time to try harder to understand and explain the intercollege differences in impact. It is important to students to get to the college or university that can best meet their individual needs. And it is important to educational policymakers to know more about the comparative effectiveness of different institutions in achieving their several objectives.

Although much of the available evidence does not meet the criteria that research scientists usually require before they make confident assertions concerning causal relationships, the evidence is, nevertheless, as strong as that frequently available in reaching policy or action decisions in other spheres. Consequently, there are two policy implications I want to discuss briefly in the context of the problem of university and college accountability--a problem that very properly has become a major concern of institutions of higher education and of the coordinating bodies that are responsible for higher education in the several states.

The first point concerns the time of appearance of changes resulting from the college experience. One of the presumed benefits of higher education is intellectual adaptability, the ability to continue to learn and to respond more effectively to whatever the future brings. Obviously, whatever success a college may achieve in attaining this kind of goal cannot be fully measured on graduation day. In interests, attitudes and values, and in civic and cultural contributions to the communities in which college graduates live, some of the results of the college experience may become more evident and more important as the years go by. It follows that from the standpoint of educational policy and management, measures of college effectiveness and comparisons among different institutions should not stop on commencement day but should follow graduates into their postcollege careers.

The second point concerns the administrative and policy use we make of whatever information is available concerning the benefits of higher education. Mounting costs are forcing us to give more attention to institutional accountability, to comparisons of different types of institutions and to cost-benefit relationships. Under these pressures there is constant temptation to emphasize the kinds of data that are most readily available, that can be measured most reliably and that can therefore be employed most easily in comparing one college or university with another.

Under these conditions, how can we give appropriate weight to the noneconomic and hard-to-quantify effects and to the differential magnitude of those effects in different institutions?

The first thing to say about this problem is that the research evidence indicates that college graduates themselves would insist that considerable weight be given to these factors. When asked to rate or rank the benefits of a college education, students and graduates include vocational preparation, better jobs, higher earnings and competency in useful skills or fields of knowledge. But quite regularly they assign as high or higher value to such outcomes as learning to get along with other people and the formation of values and life goals. Clearly the noneconomic effects are prized highly and should be counted in the balance sheet.

One method is to estimate the monetary values of the factors we want to include. For example, monetary estimates can be used in considering differential crime rates. Or again, quantitative data are available on differences in voting frequency, and one might try to estimate the dollar value of a vote and the higher value of a better-informed vote.

Whenever we can agree with reasonable consistency on the monetary values involved, this seems to be the preferable procedure; when we can use the dollar as a common yardstick, it is helpful to do so.

But I would not assign monetary values that many people would consider false or artificial. I suspect this would be the case if we tried to assign different dollar values to the votes of graduates and nongraduates. Under such circumstances, the variables should still be listed and supported by as good evidence as is available, preferably objective and quantitative evidence. This procedure distinguishes between the costs and benefits that can be treated in familiar economic terms and those that cannot, reminds anyone studying an institution's educational balance sheet that he should try to take account of variables that seem important but to which specific monetary values cannot be assigned, and makes quite explicit the nature of the political and value judgments that must be reached.

For this whole problem we have an interesting recent precedent. The National Environmental Protection Act of 1970 requires federal agencies to prepare impact analyses concerning projects that seem likely to have significant effects upon the natural environment. The authors of that act faced a problem comparable to the one we face in trying to combine economic and noneconomic elements.

To meet this problem, agencies of the federal government are directed to develop methods to "insure that presently unquantifiable amenities and values may be given appropriate consideration in decision making along with economic and technical considerations." Perhaps the state coordinating bodies should require educational institutions to file comparable statements covering both economic and noneconomic effects of their activities, with as much objective evidence as possible concerning each. Thus we would stimulate educational institutions to be more aggressive in formulating clear standards and objective methods by which they believe they should be judged.

This may be a useful way of dealing with the problem now, but still we would like to decrease our present degree of ignorance and uncertainty. To achieve that improvement we must encourage educational researchers to conduct the large-scale, longitudinal studies that may provide firmer information than we now have concerning the comparative impacts of different colleges and universities.

EFFECTS OF HIGHER EDUCATION ON CHILD REARING AND THE FAMILY[1]

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When asked by Dr. Solomon to undertake the analysis of the effects of higher education on patterns of child rearing and family life, I responded with alacrity. There were at least two reasons for my response. The first was that I had been troubled of late by paraphrases of scholarly works purporting to show that "education does not make a difference" (e.g., Jencks). The second reason related to my awareness of the difficulty in establishing any meaningful index of social class status--which represents one way of estimating what transpires between parent and child within the family environment--in fatherless families.

Most indexes of social class are based upon some combination and weighting of factors such as paternal occupation, family income, parental education and (less often) area of residence and size and type of domicile. Until very recently, the potential range of occupations likely to be available to women was somewhat narrow, with a big peaking in the clerical and sales area and lesser professionals (such as teachers). Furthermore, family income based on a woman's salary was likely to be lower than income based upon a man's salary, thus moving downward on any scale the apparent level of a home headed by a woman.

About a decade ago, while working on a study of parent-child interaction in low-income families with a large preponderance of the mother-only parent pattern, I was not satisfied with the application of traditional social class indicators and decided to use maternal education as the most appropriate indicator of the kind of environment likely to be provided by that family for the child. That is, maternal education should be correlated with what a mother does with her infant or child in the day-to-day transactions that make up a child's significant learning environment. Furthermore, this is something that is constant from one family to another, regardless of whether some families have two parents and others have only one.

It should be noted that that was a rather atypical decision and probably not a very wise one from the standpoint of ensuring comparability of data between the research in question and the remainder of research in the field. For in the myriad of studies conducted by sociologists, psychologists, educators and specialists in family life education in which some attempt has been made to relate social characteristics of the parents to some outcome variable in the child, in only a handful of studies has education per se been the variable of choice. This may stem in part from the fact that the structural aspects of the social environment--those incorporated in an index of social class--

have correlated so well with developmental variables in the child that few people have tried to tease out the effective components of the social environment. That is, perhaps researchers have remained content with the index of social class simply because it correlates so well with a host of child variables--intelligence, likelihood of developing some sort of emotional problem, acting out problems in school, academic achievement and so on.

Yet since there are discontinuities within the class measure itself (education does not correlate perfectly with income, income does not correlate perfectly with occupation, etc.), it would appear to be desirable to try to understand more fully just how the different components of a class index affect the child. This is especially relevant with respect to maternal education. That is, we assume that the input to the child from the mother during the early years is critical for priming his intellectual and emotional development, and the mother's input may well differ more as a function of the quantity and quality of education she has had than as a function of the nature of her husband's occupation and the amount of money he makes (or the two make together).

Clues From the Domain of "Lower" Education

Although the concern of this panel is specifically with the effects of higher education, we can sometimes learn a great deal about a phenomenon by examining its opposite. Thus Freud developed his theory of the normal personality development from a study of persons with some type of pathology, and oftentimes we generate ideas about how to maintain economic well-being in times of recession.

For this examination we are fortunate in having data from a just-published study by Vladimir de Lissovoy (Children Today, July-August 1973). His concern was not with higher or lower education per se but rather with styles of parenting found in adolescent parents. But, of course, a young parent is almost always by definition an undereducated parent. His particular study dealt with 48 couples in rural and semirural areas of Pennsylvania. The young families were followed over a three-year period, with their ages ranging from 15 to 18 for the girls (average, 16½) and 14½ to 19 for the boys (average, 17). Of the 48 couples, 41 of the wives and 35 of the husbands withdrew from school before graduation. At the time of data collection, many of the young couples were expecting either their second or third child.

Findings from the De Lissovoy study are very disturbing. In general the young and undereducated parents were hostile and rejecting toward their young children and seemed trapped in joyless relations with them. These findings should help put to rest for all time the myth that says that, at least insofar as we can interpret "quality" parent behavior at this point in our history, parental "instincts" give parents the cues they need to take care of their children.

The best illustration of this can be found in the unrealistic expectations many of the undereducated parents had about when certain developmental milestones should be reached. Their estimates were often grossly wrong--and always in the direction of expecting behavior long before the child can be expected to have such behavior in his repertoire. And these false expectations were held even after the parents had had experience with their own children. It should be noted here that the kinds of "normative guesses" requested of the parents (ages that children should be expected to sit alone, pull to standing, say a word, etc.) represent the kinds of things taught in any child development course in a college or university--and teachable much earlier, for that matter!

Spanking even of tiny babies was common in the sample, and many of the parents seemed to think that a baby should cry very seldom and should be spanked if they did cry. I do not mean to imply that this negative pattern of parental behavior was due only to their lack of education, for their lives were beset with a number of social and financial ills. But the sheer unreality of the expectations about children seem tragic, in view of the fact that many of these false expectations could easily be corrected in creative pre-parent and parent education courses.

As stated earlier, most studies have not tried to disentangle the two family variables, education and social class; the correlation between maternal education and social class is estimated to be around .60. One study in which an attempt was made to examine the effects of education per se was that by Sears, Maccoby and Levin (1957). Although that study is now almost two decades old, its methodology is still being utilized by others concerned with this area and its findings rather consistently supported. They found some differences in child-rearing associated with socioeconomic status, others associated with maternal education (paternal education was not examined) and still others with both. A brief review of their findings regarding social class and education would be helpful.

In general they found their middle-class mothers to be a little more permissive with respect to age at which bowel and bladder control was expected and with respect to tolerance for manifestations of dependency and aggression. Although they expected their children to go to college upon reaching the appropriate age, they were actually less concerned about current achievement than were the working-class mothers. And there were definite differences with respect to styles of discipline, with working-class mothers more punitive toward their children and a greater tendency to use both physical punishment, withdrawal of privileges and ridicule. Middle-class mothers were warmer toward their children and more in agreement with their husbands about how to rear the children.

Now as to practices that differed as a function of education of the mother but did not show a difference as a function of social class. Better-educated mothers toilet-trained their children later, gave the children more regular household tasks, used reasoning more and tangible rewards less for discipline, were less concerned about sex-appropriate behavior (e.g., boys must behave like boys and girls like girls), and were more permissive and accepting of dependency behavior in their children. It will be noted here that these patterns are highly similar, pointing as they do to greater warmth and permissiveness in both better-educated and middle-social class mothers. Nevertheless, this study alone (and there are others that have similar findings) suggest that it is possible to tease out the specific contributions of education to patterns of child-rearing and family life.

Leads for the Future

In the work that is continuing on this project, we are trying to learn more about the interaction between education and patterns of child rearing. One of the most interesting and surprising findings so far is that we have actually found so little. That is, it seems that there should be great quantities of material dealing with child-rearing patterns found in parents with a liberal arts background as opposed to technical or scientific training. Likewise, what kinds of parents do adults make who have specialized in child development or developmental psychology during their college training? How does higher education fit into the movement to develop alternative life styles for both adults and their children? These are but a few of the directions of search we are currently undertaking.

Currently our conviction is that we have been entirely too cavalier in assuming that there is a direct association between higher education and patterns of child rearing and family life. We are confident that, regardless of whether we succeed in "proving any associations," we shall be able to identify areas of needed research. Patterns of family life represent one of the most significant types of "output" that we can hope to measure in relation to any kind of input. It is discouraging to realize that we have perhaps neglected this output for others which are easier to measure (type of occupation, salary, etc.), but not necessarily as relevant for the future of the individuals involved or for the society of which they are a part.

NOTES

[1] The author wishes to express appreciation to Mrs. Elaine Carpenter for her help in the preparation of this paper.

THE IMPACT OF HIGHER EDUCATION:

A MINORITY PERSPECTIVE

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Minorities have posed a dilemma for American educators almost from the beginning of this nation. The basic issues have centered around three questions: (1) Can members of minority groups benefit from education (to the same degree as whites)? (2) Can they learn as much as whites? (3) Should they be educated (to the same extent as whites)? Almost as pervasive has been a fourth question--if they are to be educated, should they be educated along with whites or should they be educated separately in segregated facilities? Similar questions have been raised about the education of women as well. The results of this questioning of the capabilities and rights of minorities and women are manifested today in the underrepresentation of these groups in higher education and in the occupations requiring higher education.

Access to Higher Education

Before we can talk meaningfully about the impact of higher education, it is first necessary to describe attendance patterns--"who goes where to college?" A recent study (Monthly Labor Review, June 1973) found that college enrollment of 1972 high school graduates (as of October 1972) was the lowest since 1964. The decline has been concentrated among males--e.g., in 1968, 63 per cent of male graduates entered college in the fall; in 1972, 53 per cent of male graduates entered college. Attendance for women has remained stable during this period, therefore leading to a suspicion that the drop-off in enrollment is a reaction to the elimination of the military draft.

Looking at minority enrollment during the past few years, we find that the decrease in college enrollment has been entirely among white males. Since female enrollment remained stable, we infer that the drop in white enrollment (from 57 per cent in 1968 to 49 per cent in 1972) is a male phenomenon.

On the other hand, the proportion of black graduates who went on to college in 1972 (48 per cent) was about the same as in 1968 but substantially higher than 10 years earlier (34 per cent). As a result of these converging trends--white decline and black increase--there was no significant difference in the proportions of white and black graduates of 1972 enrolled in college in October. This does not mean, however, that equality of educational opportunity has been attained for blacks or other racial minorities (Asian Americans are the exception). For example, larger proportions of black (21 per cent) and Spanish origin (34 per cent) youths than whites (14 per cent) drop out of high school.

One of the more interesting enrollment trends involves black women. Traditionally, black females were more likely to attend college than males. The fall 1972 data indicate that this is no longer true.[1] The proportions of white and nonwhite males in college (53 per cent) is about the same; white (46 per cent) and nonwhite females (43 per cent) are both underrepresented compared to males. For white women, however, this represents an improvement vis-a-vis white males; for black women, this represents decline relative to black males.

Youths of Spanish origin are less likely to be enrolled in higher education than either blacks or whites. First, the dropout rate is extremely high among these youths. Second, a much smaller proportion of the age group is in college or has attended college. Native Americans (American Indians) are even more underrepresented than Spanish-origin youth. It will require extensive recruitment and support programs to improve enrollment among these groups, because both economic and cultural barriers make access to higher education extremely limited.

Types of Colleges Attended

Most of the recent increase in black enrollment has taken place in white colleges and universities because, even at full capacity, the 100 or so black colleges cannot accommodate much more than one-fourth of the total black student enrollment.

There currently are about 700,000 black college students. The proportions of black students in black (35 per cent) and white (34 per cent) four-year colleges are about equal. The remaining students are enrolled in two-year colleges. It is probable that dropout and completion rates in the two types of four-year institutions will be somewhat comparable, but it is also quite probable that a much smaller proportion of students entering two-year colleges will complete a baccalaureate degree.

Since the large increase in black enrollment has taken place quite recently, most of these students are still in the first two years of college. It will be another year or two before we will know with any degree of certainty whether or not the white colleges which are now attracting large numbers of black students are also providing them with sufficient resources to see them through college to graduation.

It is of interest to note that students at black colleges are more likely than those at white institutions to have graduate school aspirations. Whether this is a result of self-selection, recruitment or institutional impact is also a question about which we need additional information.

Plight of Black Colleges

Although black colleges have carried the burden of higher education for more than 100 years, these institutions now face grave problems. The private institutions, like their white counterparts, are suffering from the pinch of financial pressures. Although foundation support provides some relief, the problem is still severe.

The publicly supported black colleges are now faced with desegregation as an additional problem (although some of their administrators do not consider desegregation in an undesirable light). Several of the border state schools which were 100 per cent black in 1954 are now more than 50 per cent white. It is likely that state governing bodies, under pressures from federal agencies, will increasingly force these schools to become biracial or to merge with nearby predominantly white institutions. The practice of establishing new predominantly white institutions or branches of major state universities in a city which already contains a well-established black facility has caused much concern in the black community.

Black educators have expressed the fear that traditionally black colleges, which have served for generations as a repository for black culture and heritage, would be integrated out of existence. They point out that these schools have long provided training for the leaders of the black community and that they are valued by the communities they serve as well as by their alumni. They are proud of their traditions and view the effort to merge them or close them as another example of the insensitivity of white policymakers which is fostered by the racism that permeates American society. Political pressure from blacks has caused some states to reconsider their proposals for black institutions. But, there is still considerable uncertainty concerning the future of black public colleges and universities.

It should be noted here that the junior college cannot be accepted by blacks as an adequate replacement for the black four-year colleges. In the first place, students who attend junior colleges are less likely to graduate from college than students who attend four-year colleges. Available information indicates that two-year colleges have been successful in getting low-income youth into college, but have not increased their chances of getting a degree nearly as much.

Second, the four-year residential college provides a more complete socialization experience than the commuter two-year college. An important part of the college experience is the more or less gradual identification of oneself as a "professional-in-training." This kind of transformation can occur most smoothly in a four-year institution where the student does not have to undergo the trauma and decision making faced by the student who completes a two-year program and then finds it necessary to transfer to a "senior" college.

Social Mobility

When compared to a national sample of college students, black students as a group tend to be more upwardly mobile. This is evidenced by the fact that less than one-fourth of the parents of black freshmen entering college in 1968 had attended college. Almost 60 per cent of black students in black colleges and about 45 per cent of black students in white colleges had fathers who had not graduated from high school. One-half of the mothers of black students in black colleges and 38 per cent of mothers of black students in white colleges had not graduated from high school.

Occupationally, the parents of black college students tend to be semiskilled or unskilled workers. Less than one-third of the fathers of students at black colleges were white-collar workers in 1968. The average black college student, therefore, tends to be in the process of preparing for a change in social status from non-middle class to middle class.

In 1968, black students attending black colleges were more likely than black students at white colleges to come from low-income families. A recent survey reports that the gap between family incomes of black students and white students was as large in 1971 as it had been in 1968. However, the black students at white colleges also had higher family incomes than black students at black colleges in 1968. In 1971 these two groups of black students differed very little with respect to family income. The difference in the results of the two surveys may be attributable to differences in the samples of colleges surveyed, or they may reflect a change in recruiting patterns of white colleges and an increased tendency for black students from higher-income families to select black institutions.

In 1972, the median family income of white students was about $13,500; for black students, median family income was only $8,300. Another indicator of the financial problems of black students is the number who come from families with annual incomes of $5,000 or less. Only 5 per cent of white students come from families with such low incomes; for blacks, the figure is 32 per cent. Still another significant difference in the circumstances of black students at black colleges and black students at white colleges was found in patterns of financial support for education. Fully two-fifths of those enrolled in black colleges, but only one-quarter of those enrolled in white colleges, depended on their parents for financial support. Thus, it appears that the distribution of financial aid is inequitable and favors the more affluent white institutions.

Considering the financial sacrifices involved, it is not surprising that the majority of black students attend colleges close to home. We estimate that 90 per cent of students attending black colleges in the South are Southerners, the majority residing in the same state as the college attended. Private institutions tend to draw students from a broader geographic area than public institutions and to have smaller proportions of low-income students. Given the local nature of the student populations of most black institutions, it is unlikely that the number of applications for spaces in these colleges will drop sharply within this decade. The available evidence indicates that enrollments are increasing at black schools as well as at predominantly white schools, although they are increasing more rapidly at the latter.

The availability of financial assistance may well determine the extent to which black colleges and universities will be able to continue as viable institutions. Since black students tend to be predominantly the offspring of low-income families, it seems reasonable to assume that they will choose schools that require the least financial sacrifice. If resources continue to be distributed unequitably, this will strike a harsh blow at the black institutions.

Graduate and Professional Schools

Recent studies indicate that an extremely small proportion of America's earned doctoral degrees are held by blacks. Other minorities are even more underrepresented. The degree to which blacks are underrepresented in higher education has been recently reported in a work by Fred E. Crossland in which he determines the relationship between estimated enrollment and estimated population, expressed in percentages, and states that in order for blacks to achieve proportional representation in higher education, their 1970 enrollment would have had to be increased by 116 per cent. The following minority groups would have to be increased even more: Mexican Americans, 330 per cent; Puerto Ricans, 225 per cent; and American Indians, 650 per cent.[2]

Among the social sciences, sociology ranks second to psychology in the number of doctorates awarded to blacks in America. In 1967 Conyers identified 121 doctorates in sociology at the same time that Wispe et al. identified 166 black doctorates in psychology.[3] Since it is unlikely that Ph.D.-granting institutions have produced more than five or six black Ph.D.'s per year since 1967 in these fields, we estimate that there are probably more than 200 black Ph.D.'s in psychology and about 175 in sociology at this writing (1973).

Similar patterns exist for other social science areas. The committee on the Status of Blacks in the Profession of the American Political Science Association indicated that "there are probably no more than 80 black political science Ph.D.'s in the United States today (1970)." Donald Deskins, project director for the Commission on Geography and Afro-America of the Association of American Geographers, was able to identify only eight black geographers with the doctoral degree in 1970. Comparable estimates are not available for other areas of the social sciences, but there is no reason to believe that the pattern would be appreciably different for anthropology, economics or history.

We concur, therefore, with Horace Mann Bond's contention that although blacks constitute about 10 per cent (now 11.5 per cent) of the population, they constitute perhaps only about one per cent of scholars in America. Deficiencies in intellect in blacks, as Bond contends, are not responsible for the scarcity of black scholars, but imperfections of a system which wastes a great human asset.[4] The "talented tenth" of which DuBois has spoken has been, and is, far from realization. Blacks are most underrepresented in the hard sciences and engineering.

Recent trends in graduate student enrollment suggest that blacks make up 3 or 4 per cent of current graduate students. Thus, the discrepancy remains quite large and shows little indication of being eliminated in the near future. It is estimated that to achieve parity with whites in the professions by 1990, black enrollment in professional schools would have to be doubled immediately. In the sciences, the number of Ph.D.'s produced annually would have to be multiplied 15 times.

Impact of Higher Education

In this final section, I will report a few results from a longitudinal study of 10 black colleges in the south conducted by Patricia Gurin of the University of Michigan and me from 1965 to 1970. Comparable data from white institutions will be reported where available.

First of all, there is a tendency for black students to favor majors in social service areas such as teaching and social work. When asked why they had decided to go to college, students answered most frequently: "To get a better job," and, "The chance to think through what occupation and career I want and to develop some of the necessary skills for it."

By 1970, certain shifts in career choices had occurred, probably reflecting greater opportunities resulting from a lessening of job discrimination. Male freshmen, especially, were beginning to think of careers in business. There was also a concern for "helping my people" expressed by these students. Even those planning careers in medicine and law expressed a desire to return to the black community and help others after completing their training.

As numerous studies have shown, young people's attitudes change during their college years. While different colleges vary in the nature of their influence on student attitudes, there is a general tendency for students to become more liberal in their political attitudes. This is true for minority students as well. Liberalizing influences tend to be greater in private liberal arts colleges than in public institutions.

There is also a relationship between geographic location (rural-urban) and the political awareness of students. Rural institutions tend to attract rural- and small-town students and to have a generally conservative social and political climate.

Our data also indicate that race consciousness ("Black Awareness") seems to be enhanced during the college years. While this may be primarily a phenomenon of the late 1960s and early 1970s, there are strong indications that college students are much more aware of the racial ties than their parents or than high school students surveyed during the same period. Thus, it appears that those who are concerned that higher education will alienate black graduates from their communities have little to fear if the 1965 to 1970 cohort is a reliable reference group. College increases awareness of racial discrimination and political sophistication. These young people will in all likelihood be the future leaders of their communities.

In conclusion, then, we can pinpoint two major impacts of higher education on minority group youth: first, higher education opens up occupational and economic opportunities that would otherwise be closed, thereby serving as a channel for upward social mobility; second, higher education influences attitudes and values, especially in the political sphere, which encourages graduates to work toward the elimination of discrimination on the basis of race, ethnicity or sex. The benefits to future generations will be even greater as college students of this generation pass on their racial pride and political awareness to their offspring.

NOTES

[1] Although the data are reported for Negro and other races, most of the persons in this category are blacks (89 per cent). Thus, the figures are reasonable approximations of black enrollment patterns. However, since Spanish-origin females are much less likely than black females to attend college, the black proportion is probably an underestimation. For black males there is probably a comparable overestimation.

[2] Fred E. Crossland, Minority Access to College (New York: Schocken Books, 1971), 15-16.

[3] James E. Conyers, "Negro Doctorates in Sociology: A Social Portrait," Phylon, XX1X (fall 1968), 209-223; and Laren Wispe, et al., "The Negro Psychologists in America," American Psychologist, XXV, 146.

[4] Horace Mann Bond, "The Negro Scholar and Professional in America," American Negro Reference Book, ed. by John P. Davis (Englewood Cliffs, N. J., 1966) 548-88.

"THE EXPERTS ANSWER"

Charles R. Thomas, Moderator
Executive Director
College and University Systems Exchange

Question 1. "How and when will conceptual, methological and measurement problems of complex universities be addressed, particularly the joint-product aspects?"

BOB HUFF:

There is no good answer to that question. It is the single most difficult problem we have.

Distribution of expenditures in cost studies can be approached through the use of a faculty activity analysis of some kind. Basically it involves asking the faculty member what he does with his time, then using the results for allocation. There are many people who do not think that the results of a faculty activity analysis are worthwhile, so that is a question that will go on and on. I am not saying that progress cannot be made and that the problem should not be addressed in a more substantive way than in the past. But it is a problem for which there is certainly no ready answer.

I will comment on other things that seem to me to be important. If you look at all the complexities and the difficulties of doing cost studies, the reasonable, logical person sooner or later comes to the conclusion that it cannot be done; not right away, anyway. But that is not an acceptable answer. The question is, "How are we going to do it well enough for it to have some utility?"

There was an earlier reference to the opinion that poor data is better than no data. That answer obviously would not satisfy most of us. Poor data is not better than no data at all. But on the other hand, I believe that it is better to be crudely right than precisely wrong. Crude or roughly accurate data that address the proper questions are of more use than precise data that answer the wrong questions.

The question is, "Can we be crudely right when it comes to developing costs and other kinds of data related to complex research at universities?" I hope so.

Question 2. "What should an administrator do to insure that the data base administrators do not dictate the directions in which institutional dollars and emphasis are going?"

CHERYL TRAVER

There are a number of traditional answers to this question. The first is hire only idiots for these positions. The second one is the one most of us follow which is to give the people all the responsibility but no authority. And the third one would be hire only figure-head women and minorities. The fourth, and another popular one, is to hire only people whose views are the same as yours, and therefore what they dictate will essentially agree with what you desire.

These are all traditional solutions and I think we can all recognize them.

The question I would like to ask is,"Why does this question say dictating?"

It is my opinion that no one should dictate to anyone concerning the direction of an institution. Data base administrators mainly should serve as data collectors or information collectors. Their function is only to pull data together. Normally, they provide answers for a consortium of customers who represent the interests of the administration of the institution.

Basically, you should not have to worry about the data base administrator dictating policy if in the beginning you select, organize and structure the functions and organization in such a way that it represents all of the interests of the institution rather than the interest of one department.

Question 3. "How can the computing center director avoid having to make management-level decisions on new system design specifications?"

JIM MORGAN

In the design of systems I believe the role of the computing center director is being redefined. If you talk about the standards for system design or operations, there is absolutely no way that the computer center director can avoid his responsibility for setting standards. It is a fact, however, that computer center directors are involved in the detailed specifications many times when they should not be. The basic design of systems should be handled by the people who have the best and most information about that particular function. In most cases this is the user of the system. I can think of more horror stories on system design resulting from lack of user involvement than almost any other single point. System design should be a cooperative effort, and there is no way the user of a system can abdicate his roll without creating a disaster.

Question 4. "Do you feel the balance is shifting too much in the direction of new systems design instead of adopting systems that are already in existence?"

JIM MORGAN

I believe the balance always was in favor of designing systems yourself. I hope that in the last few years there have been some changes in this area. College and University Systems Exchange (CAUSE) is certainly working to promote the exchange of systems between institutions. However, institutions generally do not design their systems for exchange. In institutions having a shortage of people and money, the first activity deleted is long-range planning and the second, system design. What is left is a make-shift system that barely can be run for one institution.

In the last few years we have learned more and more about system design and consequently are seeing more systems that are documented properly. Hopefully we can reverse question No. 3 and have the balance shift from unique design to exchange of systems.

Question 5. "What are the general problems of MIS implementation from a statewide system point of view?"

FRANCIS DEGNAN

In the implementation of information systems, there are at least three absolute prerequisites. The first is a well-structured plan that is acceptable and approved by all levels of administration from the campus, central offices and the coordinating commission. A plan must be developed within one office, but it must have the complete knowledge and agreement of all concerned.

The second prerequisite, and perhaps the most important, is that there must be a management structure. You must have a responsible committee that controls and manages the development and implementation of the plan. The function of this central committee must be one of service to the campuses. It must answer their questions, and it must involve the data processing directors as professional advisors to the committee. They must, however, recognize their responsibilities as advisors.

The third and equally important prerequisite is that you must design a system so that you will be assured that it will be of benefit in producing all the results promised. The system must produce short-term results at least within the timespan of a year.

Speaking from the environment in Connecticut, we must present better information and better justification of projects to avoid a leveling off of allotments to higher education. The pressure seems to be on us to say clearly and in better form what seems to be reasonable.

Question 6. "Given the new information on costs by student program and levels of detail and costs of courses in as much detail, what is the best procedure for resolving which levels of governance--legislative, governor, coordinating commission, governing board and levels of institutional management--should have access to this information?"

FREEMAN HOLMER

I think that question is fairly well summed up by two other queries: (1) "Is higher education too important to be left to the professors?" (2) "Is some obscurity necessary in higher education?"

I suggest that obscurity is inevitable if not necessary in all aspects of higher education. We will never thoroughly solve the problems of accountability and effective management.

Information that systems are intended to provide can be useless unless we make it very clear and very certain that those who need to know certain kinds of information are able to obtain it. That is a fairly clear statement of exactly what our problem is in dealing with the plethora of systems, programs, reports and all the other paraphanalia of data management that now perplexes all of us as we try to come to grips with the data processing revolution. We need the kind of analysis which

I do not think we have had in the past. We have not had adequate analysis in our legislative halls, budget offices, coordinating councils, board offices or institutions of the kinds of data and information that are essential in the answering of questions.

We are making some efforts to conceptualize our problems, and many of these efforts are extremely worthwhile. I support the efforts of the National Center for Higher Education Management Systems (NCHEMS) and the efforts of agencies such as the legislative fiscal staffs who ask penetrating questions such as those relative to departments of higher education. Questions need to be asked and we need to provide answers. The problem is getting those who have the questions to ask to sit down long enough with us, and for us to be knowledgeable enough about the data we have, or that we can get, so that we can provide them with the kinds of answers that are essential to properly answer the kinds of questions that are properly asked.

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